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JULY • 1958

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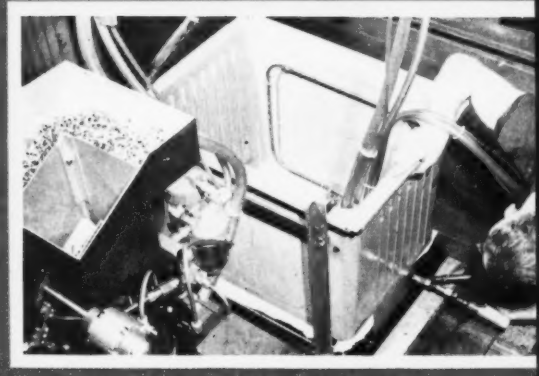
Serving the Appliance and Fabricated Metal Products Industry

Here's The Norge Automatic Ice Maker — Page 50



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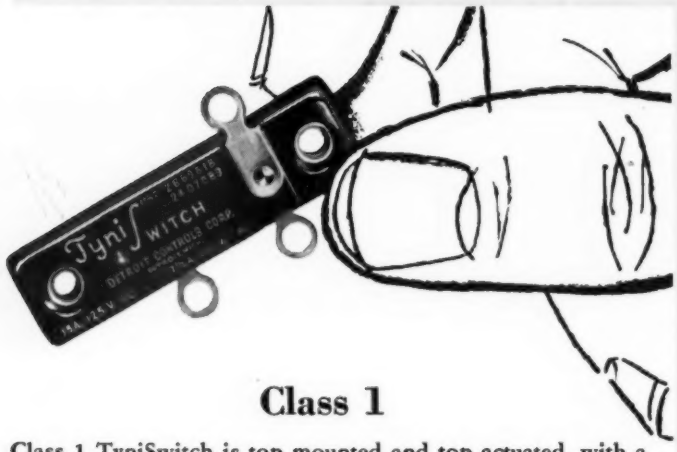
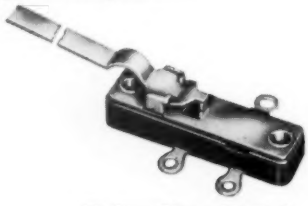
DEPENDABLE LONG LIFE

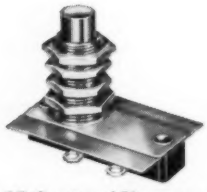


Class 1

Class 1 TyniSwitch is top mounted and top actuated, with a wide choice of terminals and actuators. It lends itself readily to special adaptations.



HL Hinged Lever Actuated



OT Overtravel Plunger and Panel Mounting

Class 4

Class 4 TyniSwitch is side mounted and top actuated, with a choice of actuators and terminals.

SL Spring Leaf Actuated

SR Spring Leaf and Roller Actuated

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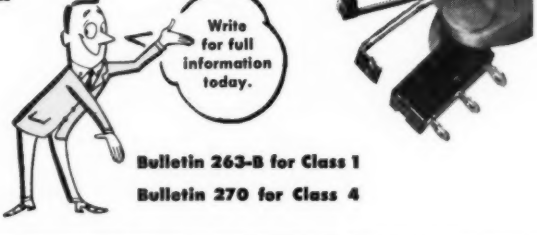

Bulletin 263-B for Class 1

Bulletin 270 for Class 4

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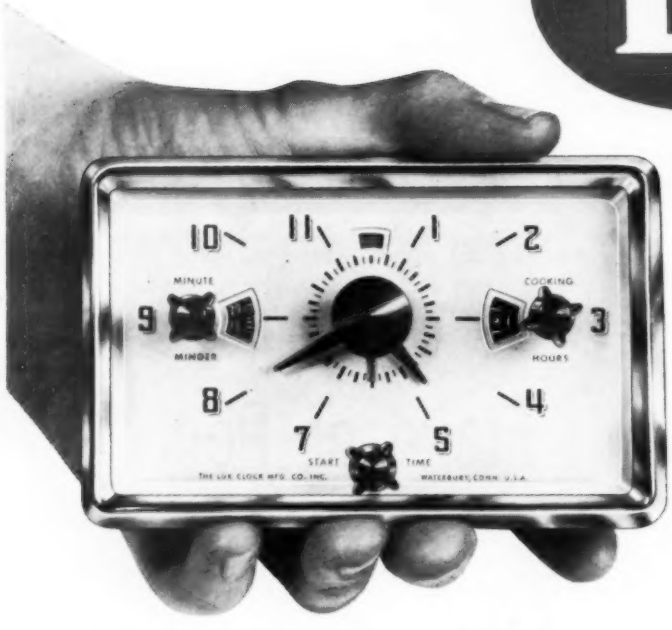

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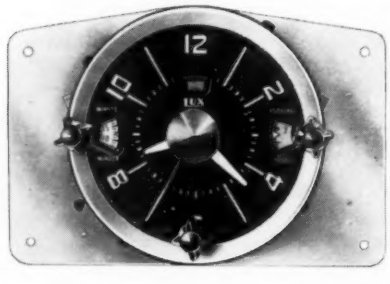

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JULY • 1958

VOL. 15 • NO. 7

MPM

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

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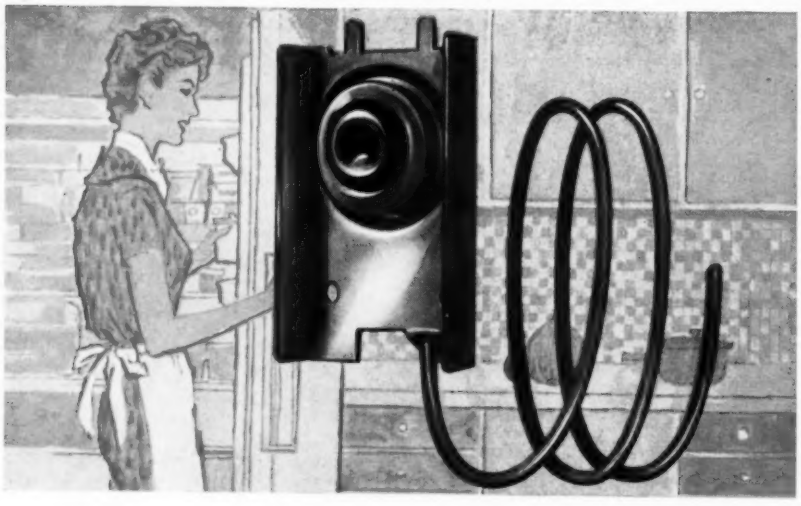

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Mr. Controls

Robertshaw-Fulton

CONTROLS COMPANY

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Feels coverage excellent

Gentlemen: Thank you for the complimentary copy of the special section of your magazine devoted to the automatic merchandising industry. We were honored to have our statement included in your magazine, and glad to receive the copy.

As the manufacturing man, I would like to compliment you on the excellent coverage of the manufacturing phases of the vending industry in your special section. You gave your readers a first-class bird's-eye view of an excellent manufacturing operation in the vending industry. You are to be congratulated.

Would you be so kind as to send us 12 extra copies of this special section, billing us for these.

Howard W. Lewis, President
Dariomatic, Inc., Los Angeles, Calif.

Ed. Note: Our supply of the special sections is completely exhausted, as the demand far exceeded our original expectations at time of publication.

Epoxy resins of interest

Gentlemen: Your article in the June issue of METAL PRODUCTS MANUFACTURING, concerning the use of epoxy resins as tooling compounds, proved to be extremely interesting reading.

We have used such tooling as spot-welding fixtures which have proved highly successful, and are interested to receive any and all information as to the success as permanent tooling on substantial long runs. We would also be interested in knowing how large the parts have been in runs of 100,000 to a million.

F. J. Vochko, Production Manager
Foley Mfg. Co., Minneapolis, Minn.

Ed. Note: This inquiry refers to a short descriptive article on the use of plastic tooling compounds based on epoxy resins, and the possibilities for reductions in cost and time. One source of additional information on this subject is News Bureau, Bakelite Co., Div. of Union Carbide Corp., 260 Madison Ave., New York 16, N. Y.

Publicity of inestimable help

Gentlemen: I want to express my thanks for your cooperation in preparing and executing the 1958 Technical Appliance Conference that was held in Chicago May 26-27. It was a complete success, with the highest registration that we have ever had, 237 attending. This is quite remarkable in that most conferences of this type were very poorly attended during the past year.

It was interesting to note that approximately 50 per cent of the people had

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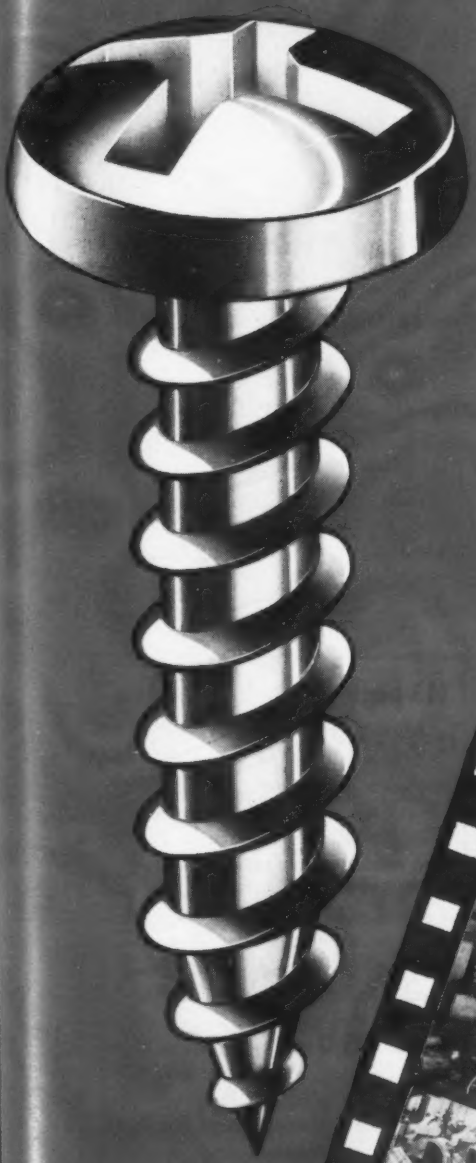

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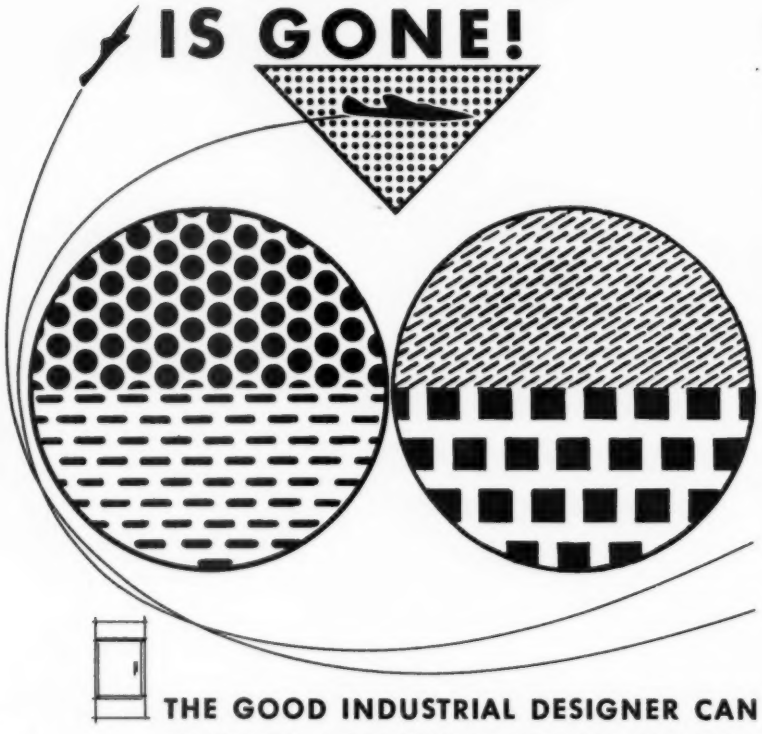

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INDUSTRY MEETINGS

HOUSEWARES

National Housewares Manufacturers' Association's 29th National Housewares Exhibit, Atlantic City Auditorium, Atlantic City, N. J., July 7-11, 1958.

APPLIANCES

Western Summer Radio-Television and Appliance Market, (Division of Western Home Goods Market), Western Merchandise Mart, San Francisco, Calif., August 3-6, 1958.

ELECTRICAL ENGINEERS

American Institute of Electrical Engineers, (Pacific General Meeting), Sacramento, Calif., August 19-22, 1958.

INSTRUMENT-AUTOMATION

13th Annual Instrument-Automation Conference, Convention Hall, Philadelphia, Pa., September 14-19, 1958.

PORCELAIN ENAMEL

Porcelain Enamel Institute's Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., September 25-27, 1958.

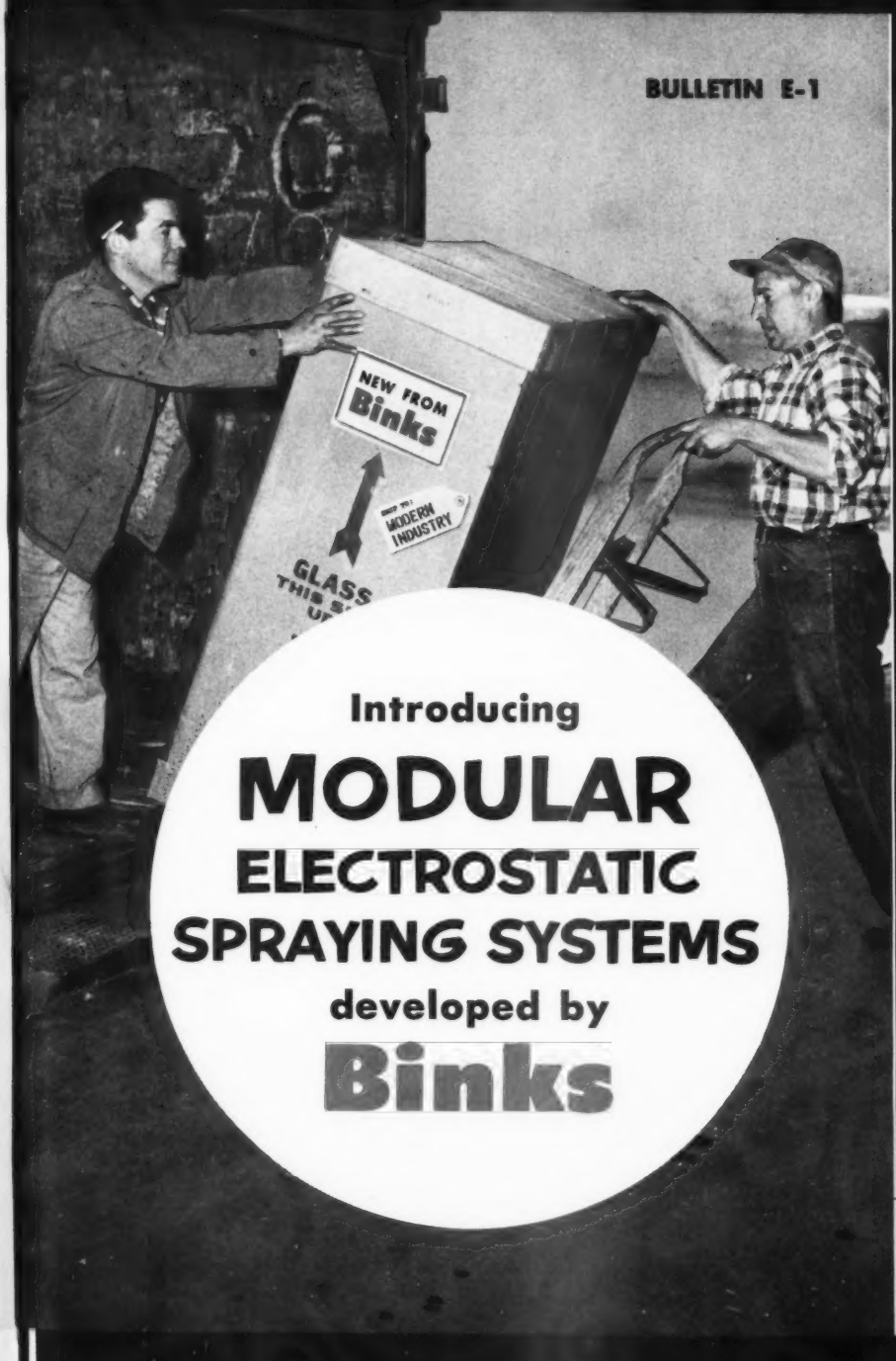
113-page textbook on porcelain enameling operations

A new edition of a complete textbook on porcelain enamel, entitled "Porcelain enameling operations," is now available without cost to those who send requests on company letterheads.

Among the chapter headings in the text are: Formulation and manufacture of porcelain enamel frit; the selection of metal and forming of shapes; the preparation of metal; control of enamel preparation, application, drying, and firing; inspection and test methods; test for comparison of qualities; efficient plant operation, furnace maintenance, and plant layout; new processes and unusual applications; and description of porcelain enameling defects.

5,000 copies of an earlier edition were distributed. For your copy of the revised text, write to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

BULLETIN E-1



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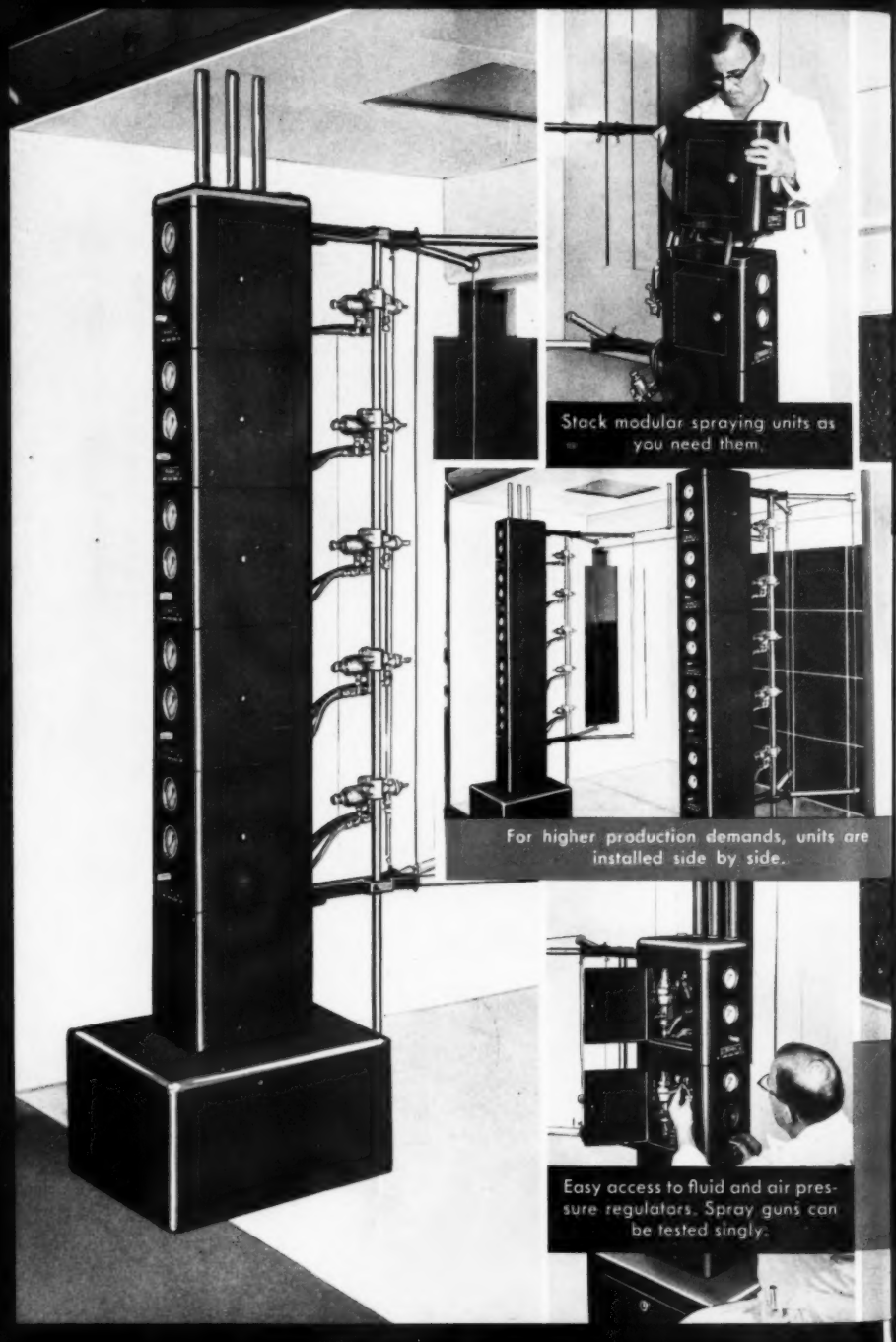

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For higher production demands, units are installed side by side.

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These features can reduce your finishing costs

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2. Fewer finishing rejects. Attraction of finishing materials to your product insures unusual coverage uniformity—even for odd shapes.

3. Drastic reduction in spray booth clean-up. Finishing materials go on the product—not on the spray booth and exhaust system.

4. Low first cost on equipment. Modular, self-contained spraying units permit custom installations without special engineering.

5. Easy installation. After assembly, simple air, fluid and power connections put you in business. Electrostatic grid is a part of the modular package—requires no attachment to the spray booth.

6. Fast easy maintenance. Entire system easily removed from spray booth as a unit for clean-up. All parts are standard for prompt maintenance or replacement.

COMPLETE STORY GIVES YOU MANY MORE COST-SAVING ADVANTAGES

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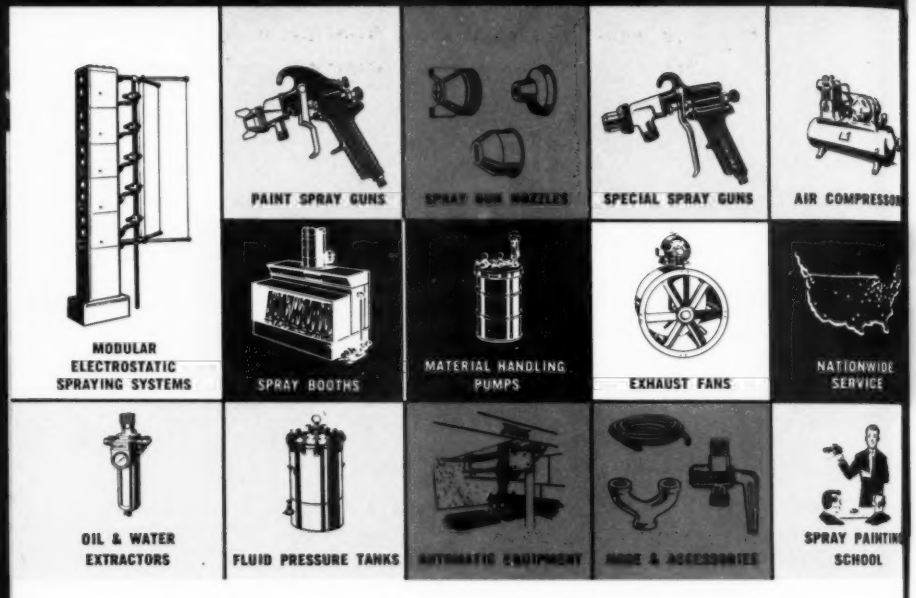

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While Binks Electrostatic Spraying Systems are the one best answer for many finishing applications, they are by no means a universal solution.

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Guthrie heads slate for Appliance Institute

methods for creating healthy consumer demand for home appliances receive top billing at the Institute of Appliance Manufacturers' 26th annual convention and exhibit

F. H. GUTHRIE

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

MEMBERS OF THE INSTITUTE of Appliance Manufacturers met at the Netherland Hilton hotel in Cincinnati on June 2, 3 and 4 for their 26th annual convention and exhibit. Attendance was reported as 498, off somewhat from earlier years, but considered by Institute officials to be a healthy attendance for 1958.

F. H. Guthrie, president, Newark Stove Co., headed the slate of new officers for the coming year. Other officers elected at the annual meeting for a two-year term, starting July 1, 1958, continuing through June 30, 1960 are: executive vice president, S. B. Rymer, Jr., president, Dixie Products, Inc.; secretary-treasurer, A. B. Ritzenthaler, vice president, The Tappan Co.; vice president — meetings, John P. Wright, president, Geo. D. Roper Corp.; vice president — publications, Walter F. Rogers, president, Crown Stove Works; and vice president — memberships, J. L. Moore, Jr., director of marketing services, The Coleman Co., Inc.

In addition to the general sessions, there was a labor relations meeting with F. H. Guthrie presiding, and individual meetings for the solid fuels division, kitchen equipment division, a joint meeting of the gas and oil heating divisions, and a meeting of a newly-organized group on outdoor cooking equipment.

Highlight of the social activity was the president's reception and buffet supper, held Tuesday evening, June 3.

IRVING GILMAN

JACK PETTERSEN

Following the annual report to the Institute by retiring president Leonard Raulston, Martin R. Gainsbrugh opened the convention's first general session with his theme of "Recovery — when and how much?"

Gainsbrugh voiced the opinion that business statistics over the past month have, in general, been far more favorable that at any time since the recession began. The combination of sharply curtailed manufacturing output and strong final demand seem to be steadily bringing the economy into better balance. In fact, a stronger case can now be made that the recession is at or near its end than at any time since it began. Gainsbrugh pointed to the alteration in buying habits. The third quarter of '55, he said, was the peak for durable goods, and since that time more money has gone to travel, education, and to the soft goods lines. In pointing up some of the reasons for our retarded business on appliances and other hard goods, he referred to the excess capacity in many of these lines. "You can build capacity to produce, quicker than you can build demand," he said. The Gainsbrugh presentation was, in general, optimistic. Among the favorable signs to which he referred were the following:

ROBERT WILSON

1) *The firming-up of personal income and retail trade.* Personal income in the first four months of 1958 never once dipped below its level a year earlier. In

fact, consumers now have just as much income to spend or save after taxes as they had on the average in 1957.

2) *New-order situation improving.* Official and unofficial data suggest that orders flowing into the nation's factories have at least stabilized and may have risen more than seasonally since February. In a number of major industries the rate of production has for many months been well below the "chew-up rate" of their customers. Steel inventories, for example, have been off far more sharply in the first quarter of 1958 than in any quarter of 1957.

3) *Construction awards rising.* Heavy construction awards have moved up steadily toward last year's highs. What was lost earlier in private contracts as

MARTIN GAINSBRUGH

the boom in plant expansion ended has now been replaced by rising awards for highways and other state and local facilities and for residential building.

This speaker suggested five means for the appliance manufacturer to improve his situation. 1) Start selling with a capital S. 2) Pay more attention to product innovation. 3) Examine internal costs again — again — and again. (Some manufacturers are earning profits now!) 4) Re-examine new market potentials. 5) Train salesmen better and train service men *far* better.

In his closing remarks, Gainsbrugh said, "A major depressant, excess capacity, still overhangs the market at mid-year. This may well retard recovery for some major capital goods producers for many months to come. The second major imbalance, excessive inventories, is being corrected rapidly. Prospects for a modest business upturn late this year depend upon a reversal of inventory liquidation, the scheduled rise in defense outlays, and continued stability of consumer purchases of soft goods and services."

Creating consumer demand in today's business climate

Irving Gilman, vice president, Institute of Motivational Research, voiced the opinion to the appliance manufacturers that this country is gifted in developing engineering know-how, but is lacking in the development of merchandising know-

LEONARD RAULSTON

how. Americans have become fatalists, who sit and wait for the course of business to change. Gilman pointed a critical finger at the appliance manufacturers in the statement that "you are still making products designed for the mothers and fathers of those who are in the market place today." He continued by saying that as a result of the increased curve of education, there is a new sophistication and changed requirements of today's buyer.

Gilman stressed the psychological importance in selling. He said that the emotional reasons for buying are at least equally important to rational, logical reasons. We are in an economy of psychological consumption, he stated. As an example, he referred to the cancellation of a single order for a steam turbine (based, in his opinion, on an emotional decision) which resulted in the cancelling of five years' planning and 22

JOSEPH MANGO

months of production, and affecting 16,000 people.

According to this speaker, products, sales and advertising and complete merchandising programs must consider the psychological as well as the material if the company, the appliance industry, and the country as a whole is to move ahead. Gilman was critical of the manufacturers in stating that "there is nothing new but the chrome strip or the 'gimmicks'." Manufacturers must stimulate new product development, he said *(Note the simile betwen these statements and those of the principal speaker of the Appliance Technical Conferences reported in this issue of* MPM.*)*. Arrogant, selfish sales methods have planted the seeds for the present situation, said Gilman. Describing everything as "new" meets consumer resistance, for it disabuses the buyer's ability to believe.

The "sorry, we can't give it to you, etc." attitude of the sellers has caused many consumers to welcome a recession, if it doesn't get "too deep," for the buyer no longer has to beg to buy, with hat in hand.

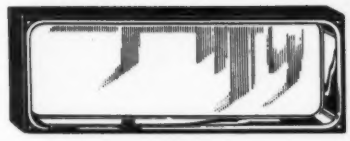
According to Gilman, the present situation calls for wholesale retraining of sales staffs, from the manufacturer through the retailer.

In referring to indiscriminate price

Meeting of the board of trustees at the IAM *convention.*

MOFFATS LIMITED . . . another user of PERMA-VIEW WINDOWS

ROUND



RECTANGULAR

SQUARE

TRAPEZOID

We can manufacture any shape, any size, any thickness to meet your engineering requirements. Alternate methods of attachment may be used.

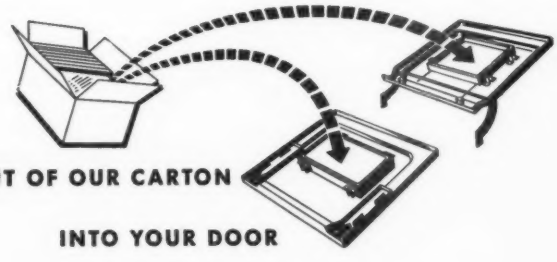
MOFFATS LIMITED

—one of the

61 leading range manufacturers

using

PERMA-VIEW oven-door windows



OUT OF OUR CARTON

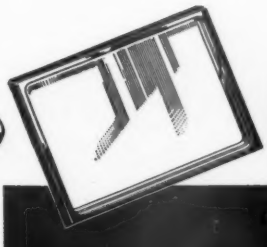
INTO YOUR DOOR

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "No-Fog" window meets the constantly growing demand for "visible baking."

Mr. D. G. Smith, Manager — Product Engineering, Moffats Limited, has this to say about the PERMA-VIEW windows:

"Our most popular Moffat Range models have been equipped with Mills Perma-View windows for the past three years. We appreciate having such a fine product available to enhance the appearance and performance of our product. Customer reaction to oven door windows has been very good and indicates more and larger windows in the future."

THIS IS A GENUINE PERMA-VIEW NON-FOG WINDOW



MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN

Left: — Coffee break and relaxation period in the Tuttle Electric Products booth. Right — Carl R. Smedley, director, color research, The Glidden Co., and John McCord, Ferro Corp., representing organic and ceramic finishes, respectively, discuss color standards in the Glidden booth.

cutting, Gilman said that if prices are slashed indiscriminately, the buyer will be convinced that he has been "taken" during recent years, and will continue to hold off buying. Price cuts must be logically explained. The psychological price is sometimes more important than the actual price.

This speaker questioned the contention that the woman is the sole major buying factor in the family. According to him, the woman buys but she is only one of the family board of directors, and the entire family must be sold. In this connection, he said that the woman has changed from "a housekeeper" to a "homemaker."

As a final warning to the appliance industry, speaker Gilman said, "A change is definitely here, and if the appliance industry remains in 1970 as it was in 1957, it is well on the road to oblivion."

New designs, new merchandising methods

A definitely constructive part of the program was a presentation by Joseph R. Mango of the firm of Banka Mango, Industrial Design, in which he presented an outline of the methods used by industrial designers in preparing for the future in appliance manufacturing. Mango also showed how Milwaukee Gas Light Company was using complete display kitchens effectively to aid in the merchandising of gas appliances. *(See "Design for the Emerson Suburba-nite," a Banka Mango project, Page 46, June* MPM.*)*

W. S. Crandall, P. B. Davies, and W. M. Schwartz, Jr. at the Proctor Electric booth.

Four keys to success

In a discussion of modern marketing, Robert Wilson, executive vice-president of Steltenkamp-Wilson and Associates, marketing consultants, listed four keys to success for the future. 1) Population growth, 2) Labor productivity, 3) Money productivity, and 4) Household expansion. In this latter reference, he referred to 1,800 new households per day being formed in 1957, and estimated that 2,100 new households will be formed per day in 1965, and 3,100 new households per day could be expected in 1975. In speaking up for sales management, he said that this section of the management team should be given greater recognition, and be given an important part on the management team.

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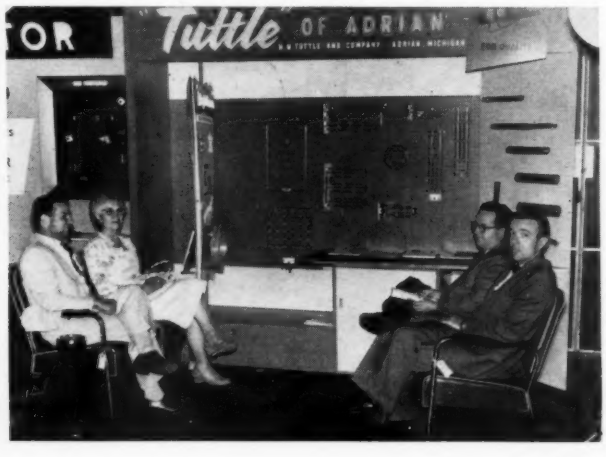
Left — Pretty model attracts visitors to the Chicago Dial booth. Right — Mrs. Tuttle exchanges pleasantries with visitors in the H. W. Tuttle booth.



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...it's designed for you!

If space is a problem in your materials movement and storage, Southern Screw's new bulk packing system offers MULTIPLE ADVANTAGES AT NO EXTRA COST TO YOU, regardless of the size of your operation.

Southern Screw's completely redesigned bulk packing meets industrial requirements for faster, more efficient materials movement. Included in Southern's redesigned system are:

(1) A completely new telescopic type, wire bound carton, 9" x 9" x 6½", of 275# test heavy duty corrugated board construction, for easier, higher stacking by one man or by power equipment.

(2) Adoption of a standard disposable 30" x 30" two-way entry pallet, carrying 4 layers of 9 bulk cartons each, with protective steel strapping. Movement to production line or storage can be in full pallet quantities or broken into smaller units for manual handling.

Based on the new carton and palletized system, standard packing quantities for each item have been established. Write for new chart, BP-1, which defines these standard packing quantities. For your copy, address Southern Screw Company, Box 1360, Statesville, N. C.

Southern SCREW COMPANY
STATESVILLE • NORTH CAROLINA

Wood Screws • Tapping Screws • Wood Drive Screws
Machine Screws & Nuts • Hanger Bolts
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Warehouses:

New York • Chicago • Dallas • Los Angeles

Photo taken at Continental Can Company's Chicago Laboratory

Republic's fabricating "Know How" helps Continental Can Company

BEAT THE HEAT AND COLD !

In a specially constructed "torture" chamber, the Continental Can Company, Chicago, exposes thousands of cans and their contents to extreme heat and cold.

The customer wanted rack-type shelving with sliding shelves that could be quickly and easily adjusted to accommodate a variety of can sizes and types, yet still weather the severe changes in temperature. Republic's Berger Division took over the problem, came up with the solution. Through its contract manufacturing facilities and equipment, Berger took the whole job off the customer's hands.

In Berger Plants many sheet steel products are fabricated for other customers and marketed under the manufacturer's brand name.

Berger's large stocks of standard tools, dies, and specialized equipment for punching, shearing, forming, welding, and Bonderizing are available to you. Constant research and development at Berger have resulted in advanced processes and equipment to make your fabricated sheet steel products more attractive, and more economical.

Men of Berger's national sales force will help work with you to solve sheet steel product problems . . . whatever your location. With Berger manufacturing, you get the sales advantage of shipment out of well-located Canton, Ohio. Republic's fabricating "know-how" provides you with the same high quality you see in Berger Division products—lockers, office furniture, shelving, and steel kitchens.

Send a sketch or blueprint with complete specifications. Berger will tell you promptly what their specialized services can do for you. Detailed information is available in Bulletin 1090.

REPUBLIC FILING CABINETS are available in a wide range of styles and sizes to meet any office filing requirement. Drawers coast on cradle-type progressive ball-bearing suspension slides. All steel construction withstands exceptionally hard use. See your dealer—or send coupon today.

SOLVE THE PROBLEM of storing heavy items with Republic Wedge-Lock Steel Shelving. It is specifically designed for high stacking of enormous weights. The joints actually get tighter as more weight is added. Wedge-Lock Steel Shelving provides maximum loading in minimum floor space. Shelves can be easily adjusted — whole units can be converted or combined to suit changing needs. It can be easily and quickly assembled. Send coupon for full information.

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Here's the Norge automatic ice

Jud Sayre, president of Norge, is shown with Virgil Rice, vice-president of manufacturing and engineering, admiring the new automatic ice maker.

MPM FEATURE

The automatic ice maker unveiled by Norge at the recent summer home furnishings market is installed by tightening one bolt on a connection to a cold water faucet. It has compartments which are automatically re-filled and turns off when stocked with cubes.

Set into a corner of the freezer section, the new ice maker is turned on and off with a lever. It fills itself, freezes the ice, breaks the ice loose and drops crescent-shaped cubes into a drawer. Following is a detailed description of its operation and then a complete description of the components that make up the device.

A. OPERATION OF THE NORGE ICE CUBE MAKER

The ice cube maker will fill the tray with water, freeze, break the ice loose from the tray and dispense the ice into the top ice drawer. This process is repeated until the ice drawer is full, then the ice cube maker will shut-off. When enough cubes are removed from the top ice drawer, the mechanism automatically refills the drawer. The mechanical sequence of this operation is as follows:

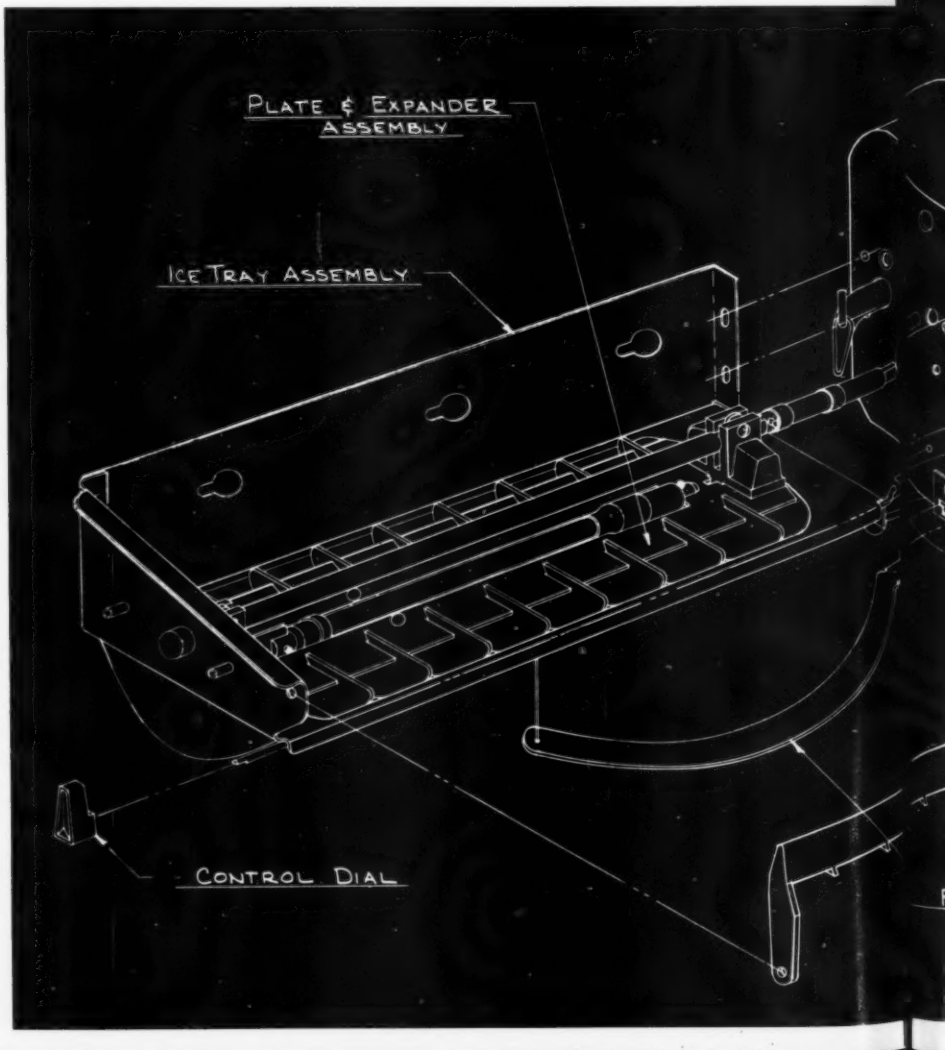
1. Brine in the expander tube freezes and expands. The plunger of the expander moves the sliding horizontal plate and, in turn, the grids from a slanted to a vertical position, thereby breaking the ice loose. The plunger of the expander continues to travel moving the cam assembly backwards to contact and operate the switch lever on the master motor control switch. The motor is energized by the closed contacts of the motor control switch and the cam and grid assembly start to rotate, because they are coupled directly to the motor shaft.

2. Grids and expander assembly rotate and the ice cubes are pushed up and out of the tray by movement of the grid assembly. The vertical plate of the grid assembly forces the first roll of cubes out of the tray and the second roll of cubes is forced out by the wide horizontal plate, which has rotated and become a vertical plate. A rake is incorporated in the path of the rotating grid assembly to help discharge the ice cubes into the ice drawer.

3. When the grids have rotated half way through one rotation, the water solenoid switch is closed by action of the main cam and thereby energizes the water valve solenoid. Water flows into the tray pan for a period of 20 seconds.

4. At a pre-determined spot on the cam the water solenoid switch is opened, thereby de-energizing the water solenoid, stopping the flow of water into the tray. This occurs just before the grids are in the final reset position.

5. The grids stop rotation in the final reset position with the plunger of the expander still in the expanded



tidice maker

Shown for the first time at the summer home furnishings market in Chicago, June 19th. This is how the device operates

position. To prevent continual rotation of the cam (because the cam is still holding the motor switch closed by the action of the expander) there is a sliding member in the cam which allows the lever on the motor switch to drop in a hole in the cam to open the electrical circuit to the motor.

6. The plunger of the expander retracts due to the heat of the refill water defrosting the brine solution, and the cam assembly moves with the plunger because of spring tension. As the cam repositions, over the sliding member in the cam body, a safety spring located on the top of the cam body drops through a slot in the cam and then into the sliding member of the cam body. At this point the expander is repositioned for the next cycle.

7. This cycle is repeated until the ice cubes have filled the ice drawer with approximately 4½ lbs. of ice. The weight of the ice in the ice drawer operates the shut-off mechanism.

NOTE: The grids will rotate and stop at the half way point or in the "up" position. In this position water will not enter the tray.

8. When the ice drawer is pulled forward for removal of ice cubes the complete mechanism shuts off by action of the automatic shut-off and feeler arm arrangement. This prevents the

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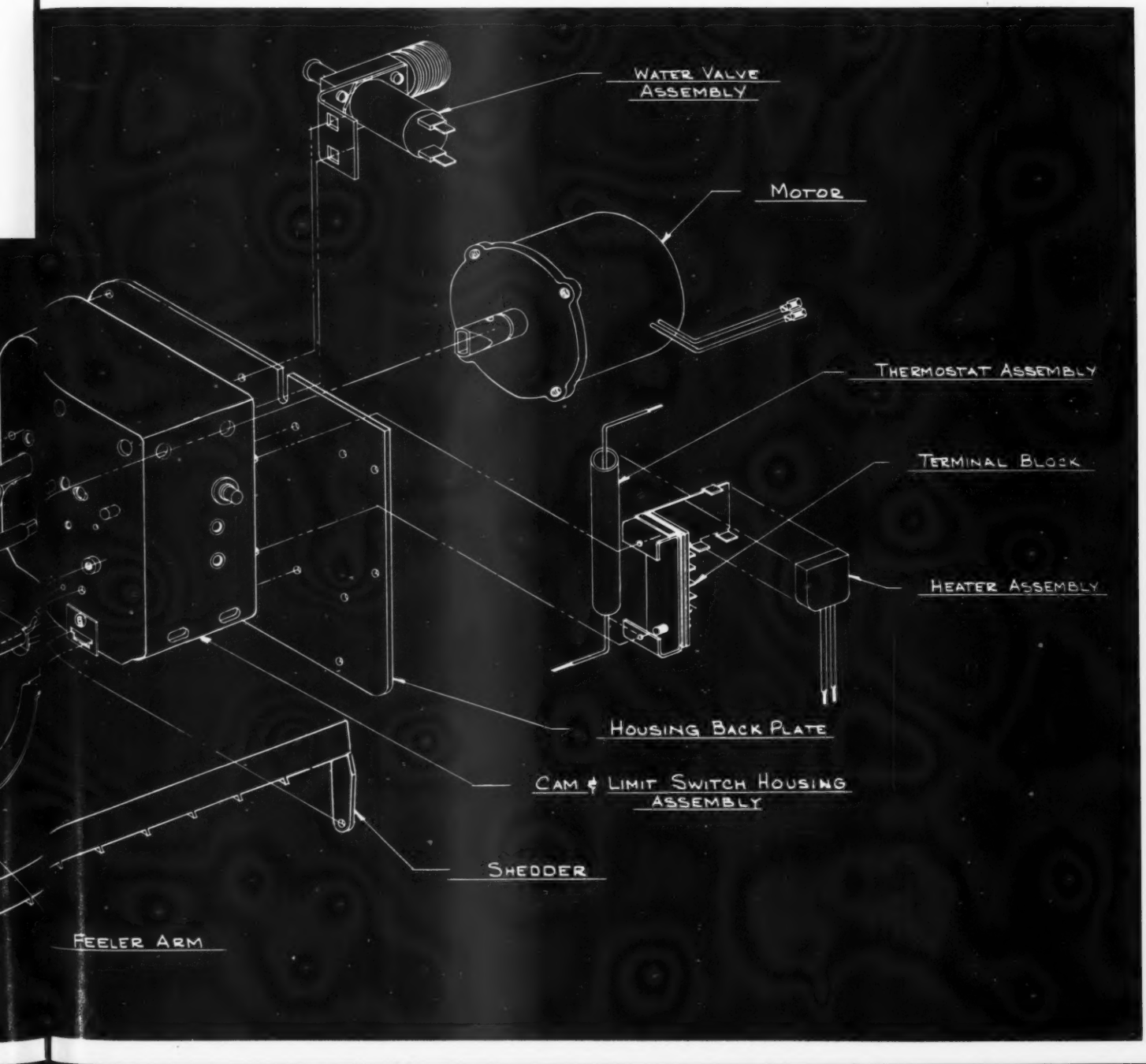

THE finish LINE

APPLIANCES, AUTOS

CONSUMERS REBEL!
THEY'RE FED UP WITH REPAIR BILLS

A GUEST EDITORIAL by Sylvia Porter

EDITOR'S NOTE:

This Finish Line editorial goes to the *manufacturers* of home appliances and similar fabricated metal products, but obviously the original syndicated column was read by thousands of homemakers — the *customers* of our readers.

Sylvia Porter's popular syndicated column appears regularly in the Chicago Daily News.

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High priced but inferior products cut down buying

Countless numbers of American consumers are getting thoroughly fed up with mounting repair bills on the record number of appliances and autos they own.

Countless numbers are revolting not so much against the glitter on many new products today as they are against the deteriorating quality of the products themselves, inferior workmanship.

Those who are "trading down" purchases are not doing so because they suddenly prefer a lower-quality product. On the contrary, most who are shifting from higher-priced to lower-priced goods are doing this because they have been bitterly disappointed by the performance of the higher-priced products and figure they'll make out just as well with a stripped-down, cheaper model.

A surprising number actually are getting perverse pleasure out of the fact that the auto-makers are having a tough year, say such things as, "They did nothing for us but push us around when they had the 'upper hand' . . . . Let them sweat for a while and know how it feels."

While consumers are attracted by gadgets on appliances and cars, many don't use the buttons, timers, etc.

You need plenty of things. Your wants and desires for products are far from saturated. What's more, millions of you have plenty of money to finance the purchases.

Looking for higher quality

But a lot of you are waiting for the appearance on the market of products that you believe will have higher quality and workmanship, that will give you more satisfactory performance and that won't cost you whopping amounts in repairs.

A month ago in a column I wondered out loud whether the American consumer was rebelling against the planned obsolescence policy of many industries—and whether you were beginning to refuse to turn in a car or appliance every few years for a new one just because a more advanced model made the old one seem obsolete. I also reported violent arguments at the top level of industry over the doctrine of planned obsolescence.

Since that column appeared consumers have deluged me with hundreds of letters. Rarely has any column I've written spurred so great a response.

More than 97 per cent of the letters indicated anger. And not one letter I received was a "crank;" all were intelligently written.

'Nothing dependable inside'

It strikes me as decidedly provocative that so many would bother to write to say, "Thank you for putting into print what I feel and giving me a chance to get this gripe off my chest."

I have studied each letter carefully. The points at the start of this column summarize their messages.

Their greatest resentment is about repair.

Typical are such comments as "cheap, flimsy stuff, always in need of repair." . . . "There is so much of nothing to everything—fuss on the outside and nothing dependable inside." . . . "We would like to see more engineers consult repairmen before putting a product on the market."

New Thermosetting Acrylic Finish

resists detergents, abrasion, light and heat!

VITRILAN*

Now you can achieve a new excellence in finish performance with VITRILAN, Interchemical's *thermosetting* acrylic finish that brings improved all-around protection and lustrous beauty to appliances and other fabricated metal products.

VITRILAN is a really *new* finish that combines the color retention, the chemical and abrasion resistance of the acrylics with the hardness and toughness of a baking enamel.

Here's what this can mean to *you!*

... For home laundry and dishwashing appliances—outstanding soap and detergent resistance.

... For cooking and heating appliances—better color retention at temperatures up to 400°F., surpassed only by silicone finishes costing up to three times as much.

... For *any* appliance—improved resistance to abrasion, corrosion, food and drug staining plus remarkable gloss and color retention on exposure to light; produces whites that *stay* white longer.

For the complete story,

write for the new bulletin on IC VITRILAN.

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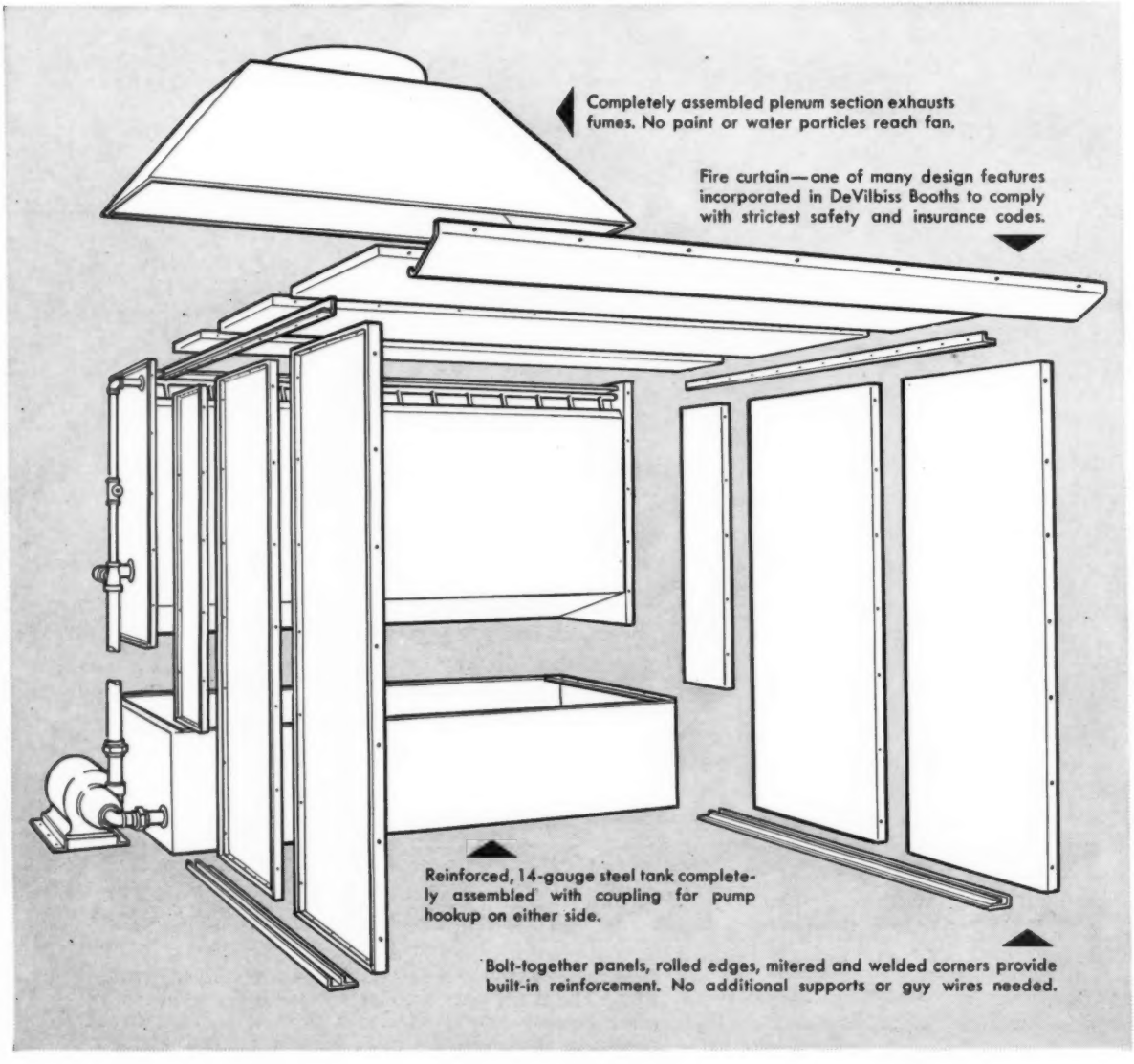
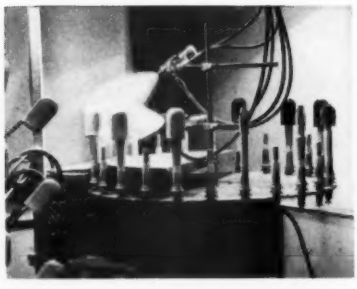
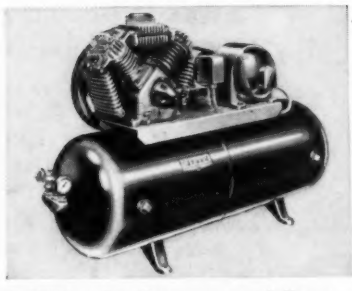
How DeVilbiss Standardized Spray

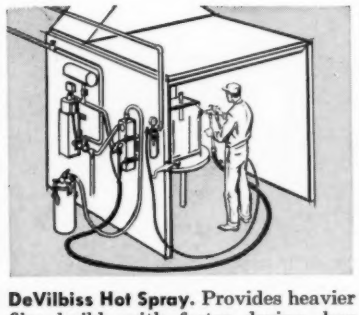

Completely assembled plenum section exhausts fumes. No paint or water particles reach fan.
Fire curtain—one of many design features incorporated in DeVilbiss Booths to comply with strictest safety and insurance codes.
Reinforced, 14-gauge steel tank completely assembled with coupling for pump hookup on either side.
Bolt-together panels, rolled edges, mitered and welded corners provide built-in reinforcement. No additional supports or guy wires needed.



DeVilbiss Automatic Spray Machines coat products of any size or shape quickly, economically, automatically.
Send for Series I-8000 Bulletins

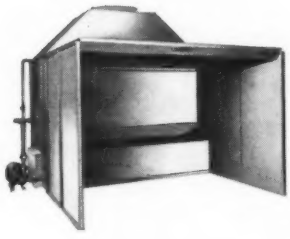


DeVilbiss Air Compressors deliver as much as 22.6% more air per power dollar. Sizes range from ½ to 25 hp.
Send for Catalog C-50



DeVilbiss Hot Spray. Provides heavier film build, with faster drying, less overspray, and fewer rejects.
Send for Bulletins IE-114B and F-286

Booths save assembly costs



Prefabricated parts bolt together to form a rigid, self-supporting structure. It's quick, easy! Wide selection of sizes and types

More value for your spray-booth dollar. DeVilbiss "ready-made" booths can be assembled quickly and economically by simply bolting standardized parts together; are easily modified to meet future needs. Mass-produced panels, accurately sized and punched, are self-reinforcing . . . form a rigid, free-standing structure. Snug fit provides a smooth, easy-to-clean interior surface.

DeVilbiss Spray Booths have outstanding design and construction features that are responsible for their high paint-trapping efficiency, their ease of installation. And you save on operating costs, too. Perfected design principles reduce power consumption of fans and pumps. Booths stay cleaner longer; require less maintenance time and expense.

They are manufactured to the standards of the National Board of Fire Underwriters for spray booths as recommended by the National Fire Protection Association.

Selection and delivery are no problem, either. In most cases, one of over 500 standard sizes and combinations will fit your needs. But should you require equipment for a special installation, or help in selecting and pricing components, a DeVilbiss representative will be glad to work with your engineers at no cost or obligation.

PLUS VALUE: At DeVilbiss, you deal with the *only* one-source designer and manufacturer of completely engineered finishing systems or individual components. Call your nearest branch office, today. Or write for a copy of the Spray Booth Catalog I-7000 containing handy selector guide.

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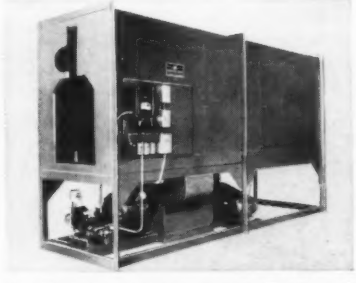
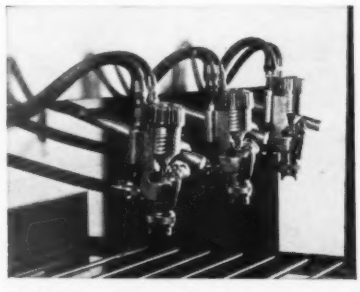
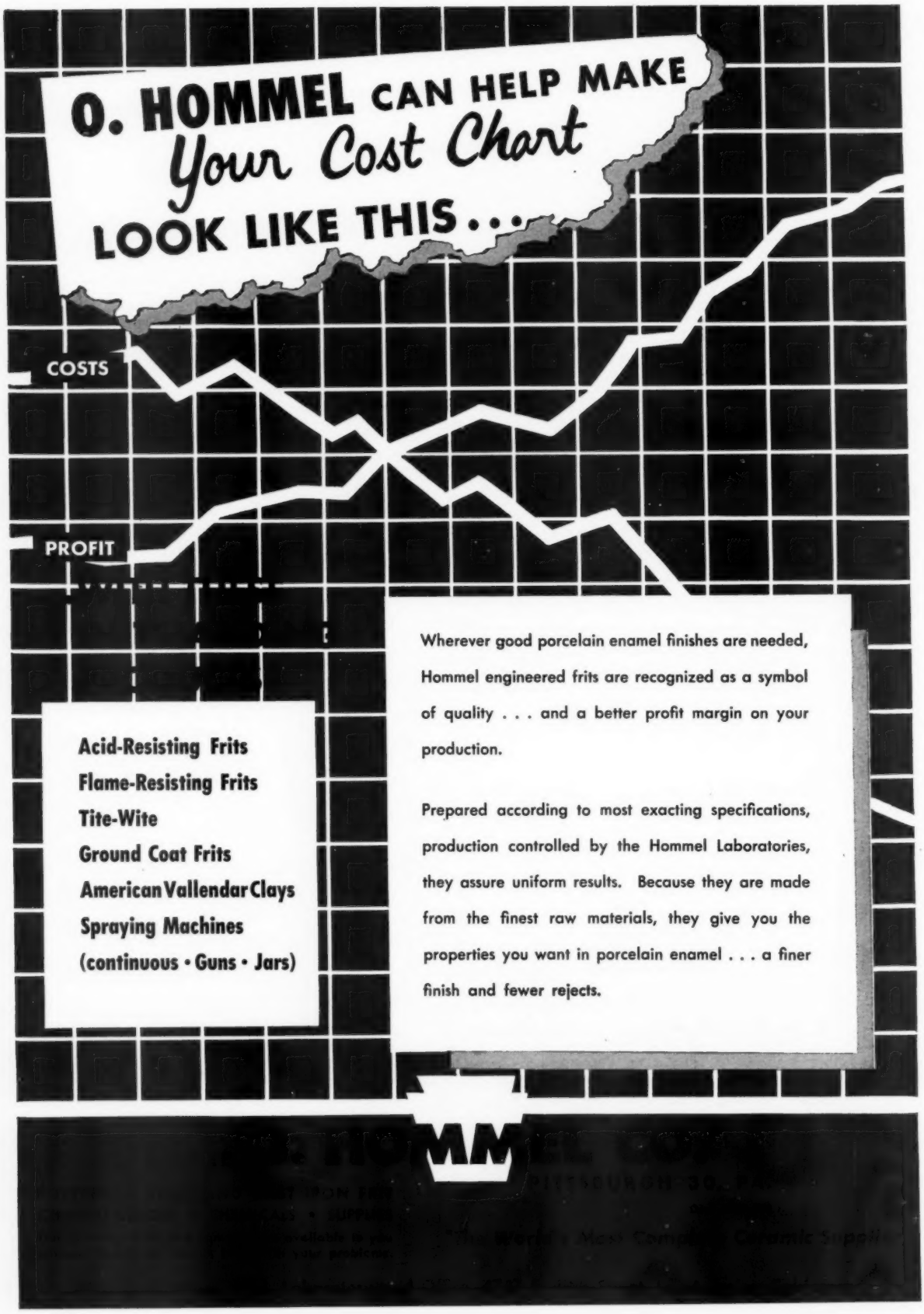


Continuous process ovens. Designed and manufactured to meet layout and production needs for baking or drying.
Send for Oven Catalog



DeVilbiss Automatic Guns spray all coatings accurately, uniformly; insure better finishes at lower cost.
Send for Catalog I-1125A

DeVilbiss Fluid Hose. Unsurpassed for resistance to solvents, oils. Flexible, kinkproof. Full line of connections.
Send for Catalog IE-E.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Flame-Resisting Frits
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Ground Coat Frits
American Vallendar Clays
Spraying Machines
(continuous • Guns • Jars)
Wherever good porcelain enamel finishes are needed, Hommel engineered frits are recognized as a symbol of quality . . . and a better profit margin on your production.
Prepared according to most exacting specifications, production controlled by the Hommel Laboratories, they assure uniform results. Because they are made from the finest raw materials, they give you the properties you want in porcelain enamel . . . a finer finish and fewer rejects.

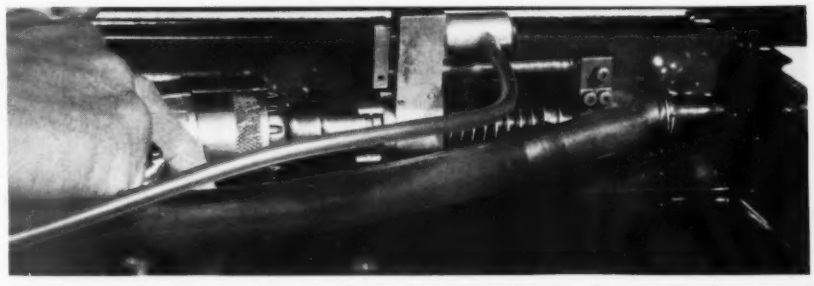
Automated tools cut assembly time

nine-step assembly shows how time is saved in the setting of fifty-one screws in specially-designed electric range at Newark Stove

PHOTOS COURTESY PARKER-KALON DIV., GENERAL AMERICAN TRANSPORTATION CORP.

ELECTRIC RANGE BUILDERS at Newark Stove Co., Newark, Ohio, have cut screw driving time by an average of more than eight minutes per range. They are doing things in new ways that give the reader a slant on the manner in which some appliance manufacturers are overcoming the problem of increasing costs to the point where quality can be maintained without a corresponding increase in price — and without destroying profit margins.

In the case of Newark Stove, where Sears Roebuck's Kenmore electric ranges are produced, an investment of less than $15,000 in nine automated screw feeding units has virtually eliminated the manual handling of 51 of the screws required on a single popular new range model.



Closeup of the automated screw driver in action, showing how easily the tapered driver head can be used in tight places. A No. 10 x 5/8-inch screw with pre-assembled washer is being driven to hold the oven top liner to the end-panel. The hole through which this screw is being driven is close to the vertical face of liner.

From hopper to screw driver

According to Howard B. Kibler, production engineer, the use of automated screw feeding has resulted in reducing the average driving time per screw. These feeding units deliver screws with pre-assembled self-locking washers from hoppers to portable power screw drivers, used by nine men in the assembly crew as they move freely around the ranges which are built up on a long platform conveyor.

Executives of the manufacturing concern estimate that the cost of installing the nine automated units for setting fasteners along this one assembly line averaged about $100 per unit, over and above the purchase price of $1,500 per unit. They point out that it represents just one of many factors which have contributed to the successful assault on production costs on this new Kenmore model, which had been completely redesigned before the line went into operation last fall. The change resulting from this automation of screw driving, one of the most commonplace of all assembly functions, has enabled Newark Stove to give consumers substantially increased value and at the same time maintain the return on its invested capital.

The use of automated screw drivers in the assembly of Sears' Kenmore electric ranges is illustrated in this article by the applications of this equipment on the assembly line. This line went into operation in October, 1957, and is devoted entirely to the production of a new model which was designed to permit the use of the special equipment for virtually all permanent screw fastening operations.

Reduced driving time per screw

A total of fifty-one #10 screws, forty-five of which carry pre-assembled self-locking washers, are used on each range. According to Kibler, the use of automated screw feeding has resulted in reducing the average driving time per screw. This works out to something over eight minutes per range.

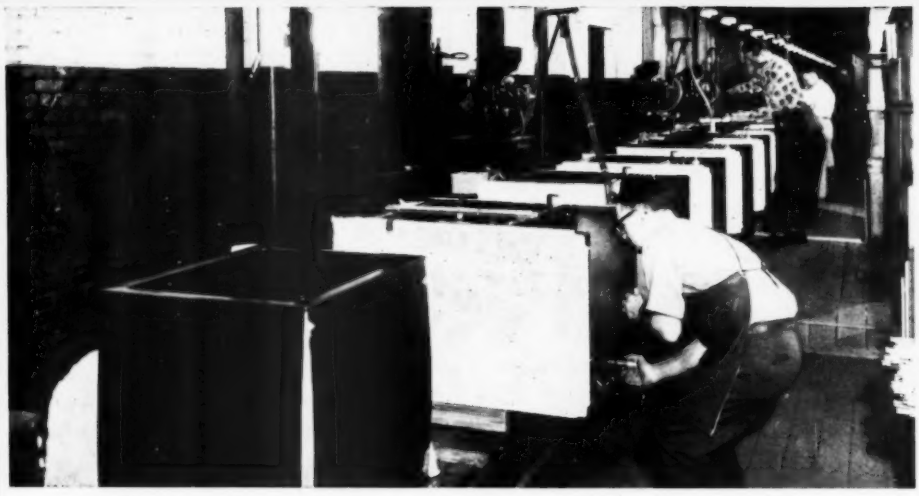
Operations, along with a variety of other tasks, are all performed at individual stations as follows:

Station 1 — An operator, at the head of a long continuous platform conveyor, drives two screws (without washers) in fastening the service lead support or connection box to the stove back. This is done with the back upright in a vertical jig so that the driving can be done down-hand. The operator then places the stove in a horizontal position on a wooden assembly skid; applies a blanket of insulation to the back, sets the oven on the blanket, and then pushes the assembly skid with the parts in place onto the platform conveyor.

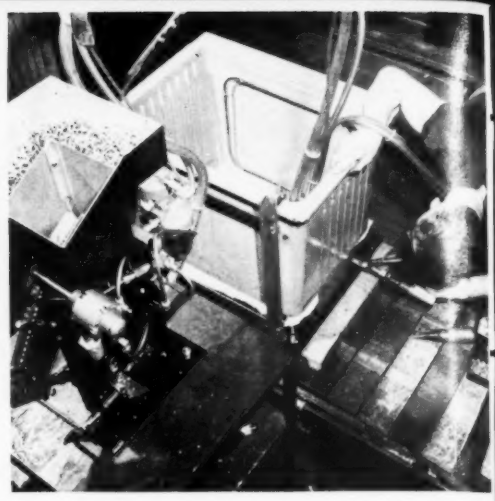
Station 2 — The second unit is mounted on a special welded steel stand developed by the company for use alongside moving assembly lines. The unit at this location is used to drive four screws (without washers) which fasten the oven to the range back. These operations are also performed down-hand, since the range starts out on its back as previously stated.

Station 3 — This operation is at a separate sub-assembly location from which end-panel assemblies are delivered in racks to the moving assembly line. At this sub-assembly location, the enameled end-panels are placed in a horizontal jig, a pair of automated horizontal tappers tap the leg-levelling holes, while the operator, meanwhile, uses the special tool to install five screws with pre-assembled washers.

Station 4 — At this point, the end-panel assemblies are installed, six screws with pre-assembled washers being driven through holes in oven bottom support



This view shows an oven on its back, with insulation and sheet metal liners in place, as it moves toward the station where the end-panel assemblies are installed. The operator in foreground drives eight screws, all with pre-assembled washers.



This second tool on the line is used to fasten four screws which hold the oven to the range back. Note way in which hopper has been mounted on a sturdy stand alongside the line.

into oven front, oven back, right end-panel, and left end-panel. Then the same operator installs the two slides for the drawer, driving one screw through the front of each slide into the end-panel.

Station 5 — Here, the operator drives four screws which hold the hinged cams to the oven door liner.

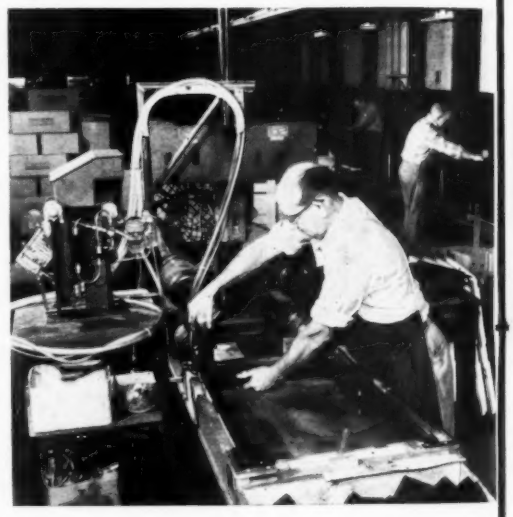
Station 6 — The operator places the oven door insulation and then slips the oven door panel over the liner so that the top has been locked in place before he drives the three screws at the bottom of the door panel. Immediately following this operation, the range is placed on a light rectangular wood frame, which becomes the base for the shipping container.

Station 7 — This station is equipped with a special collet-head tool, which is required because the limited clearance available for fastening the oven top insulation liner is not sufficient to permit use of a standard tool. Here, five screws with pre-assembled washers are used to hold the oven top liner. Three of these are driven down-hand into the oven, and two are driven horizontally into the end frame at the corners. The operator at this location also drives three screws with pre-assembled washers which hold the top of the oven door liner, installs the insulating blanket on the oven top, and sets the pre-assembled range top, with burners installed, in place.

Station 8 — Here, the operator drives two screws with pre-assembled washers which connect the main top to the rear gusset; installs four more to hold the two backguard support brackets, plus another for the ground strap, and still another for the ground wire.

Station 9 — At the last assembly position, four screws with pre-assembled washers are used to assemble the backguard brackets to the backguard.

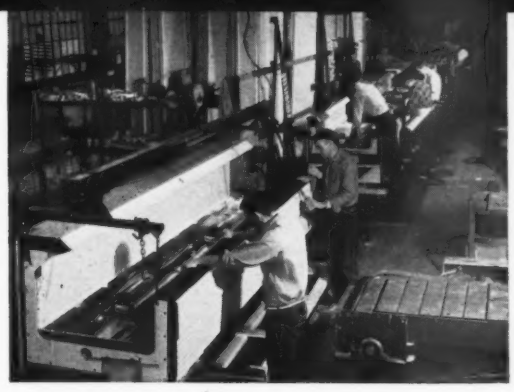
A twelve-foot length of hose is used on the automated units, so that the flexibility needed to perform any given set of assorted operations along this moving assembly line can be easily accommodated.



The end-panels for electric ranges are assembled at this location, just five feet from the moving platform conveyor on which these units take final form.

By the time the wide-oven ranges reach the end of this moving assembly line, a saving of more than eight minutes of screw driving time has been affected through the use of nine automated screw drivers, one of which is shown here. Ranges are assembled on a wooden base which serves as the bottom frame for each container.

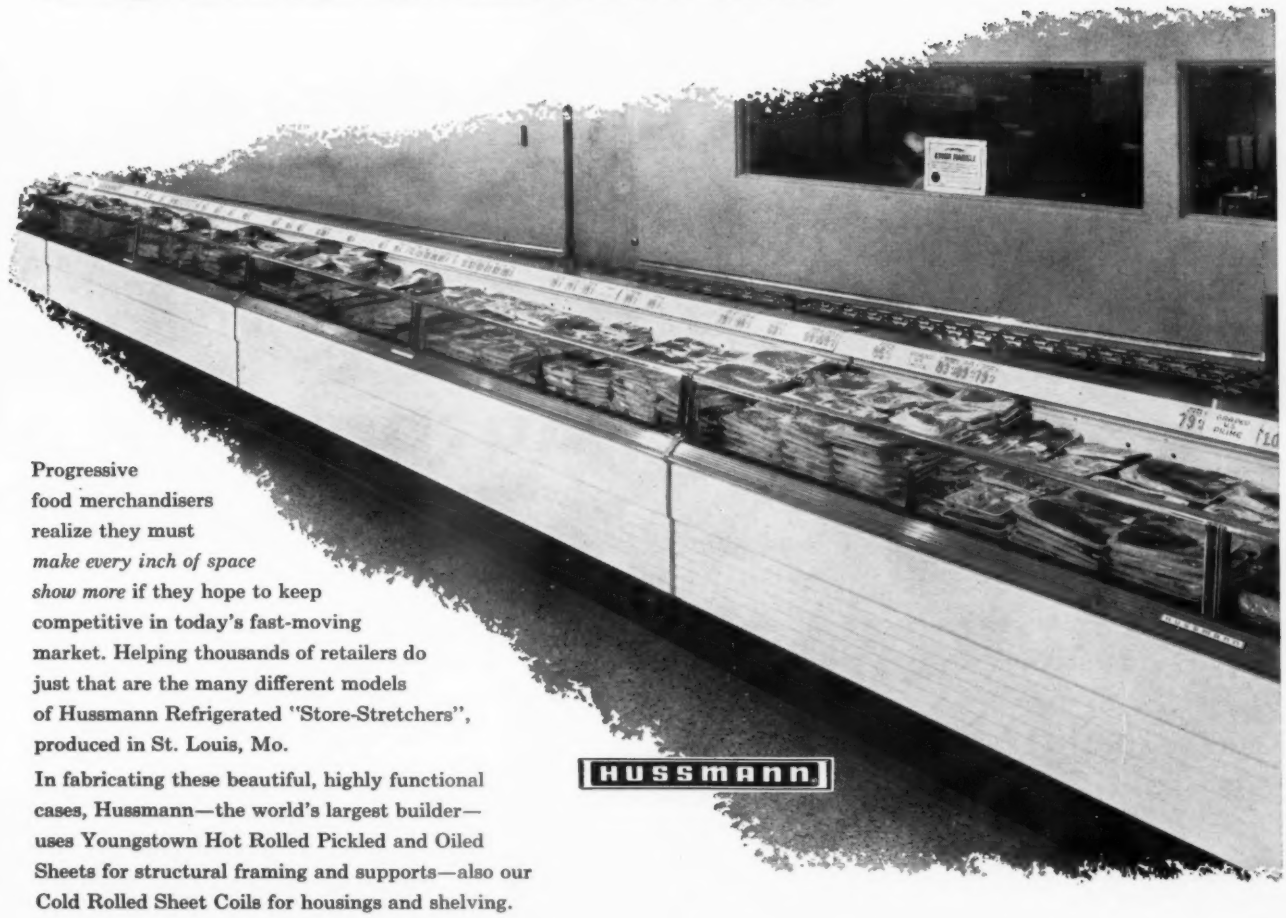
Man in background uses tool to drive four screws which hold the hinged cams to oven door liner. Operator on left drives three screws at bottom of oven door panel.



Workmen busy *on the Hussmann assembly line in St. Louis producing quality refrigerated showcases for food markets all over the world.*

Accent on Excellence

Youngstown hot and cold-rolled sheets



Progressive food merchandisers realize they must *make every inch of space show more* if they hope to keep competitive in today's fast-moving market. Helping thousands of retailers do just that are the many different models of Hussmann Refrigerated "Store-Stretchers", produced in St. Louis, Mo.

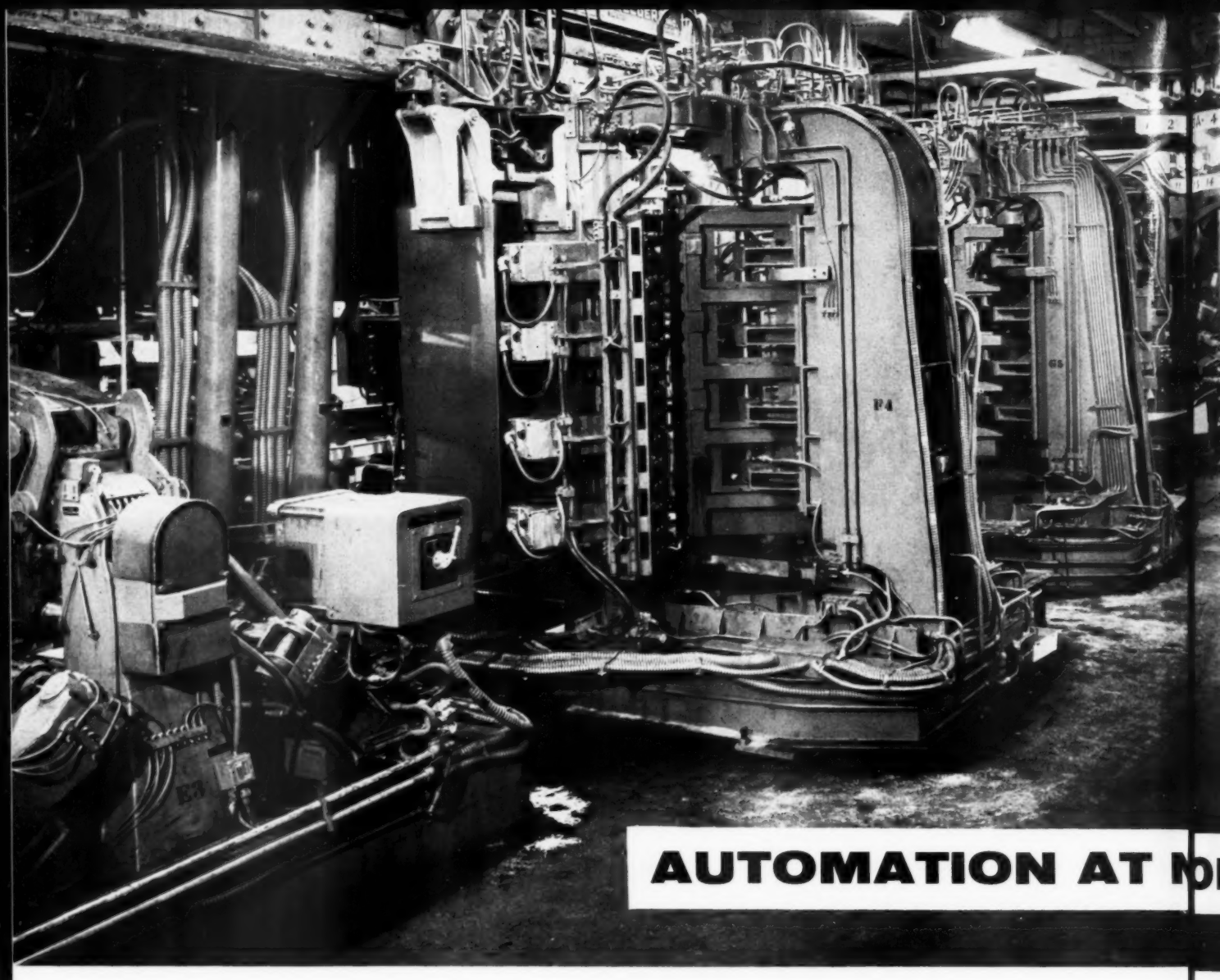
In fabricating these beautiful, highly functional cases, Hussmann—the world's largest builder—uses Youngstown Hot Rolled Pickled and Oiled Sheets for structural framing and supports—also our Cold Rolled Sheet Coils for housings and shelving.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

QUALITY YOUNGSTOWN SERVICE

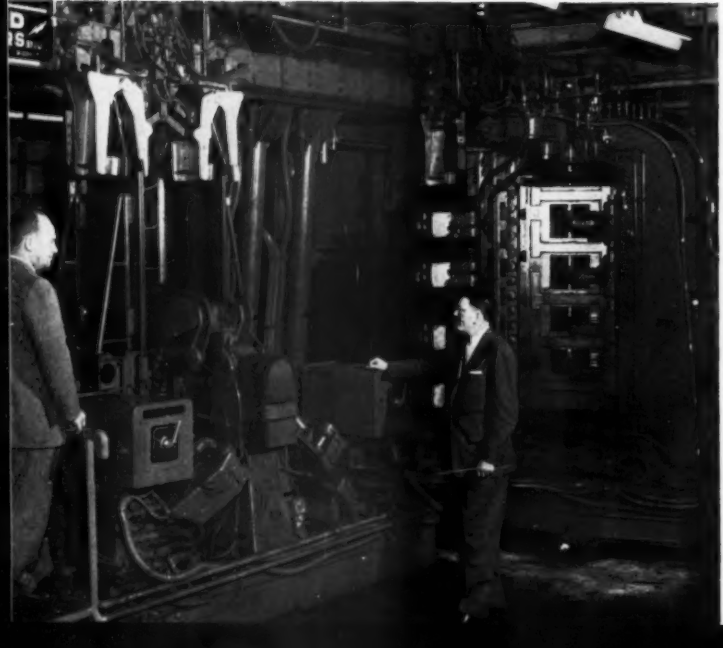
THE **YOUNGSTOWN**
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio



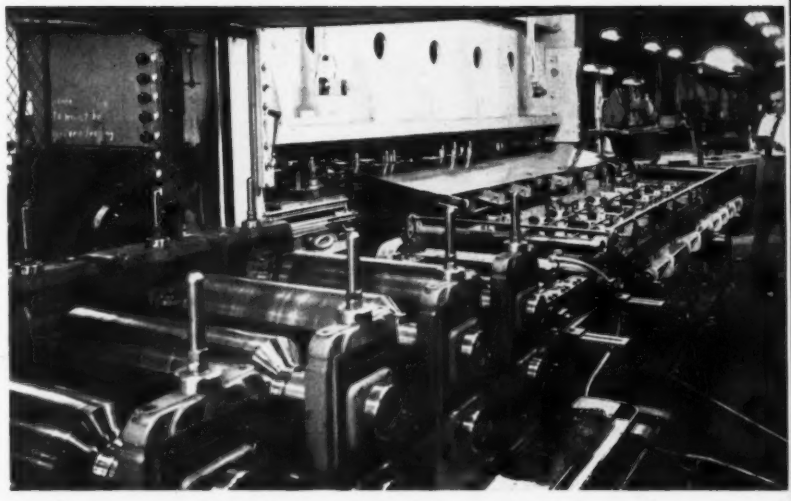
AUTOMATION AT N

condensed photo story of Norge's new refrigerator cabinet fabrication line — two similarly automated lines — for "tanks" and doors — complete the fabricating installation



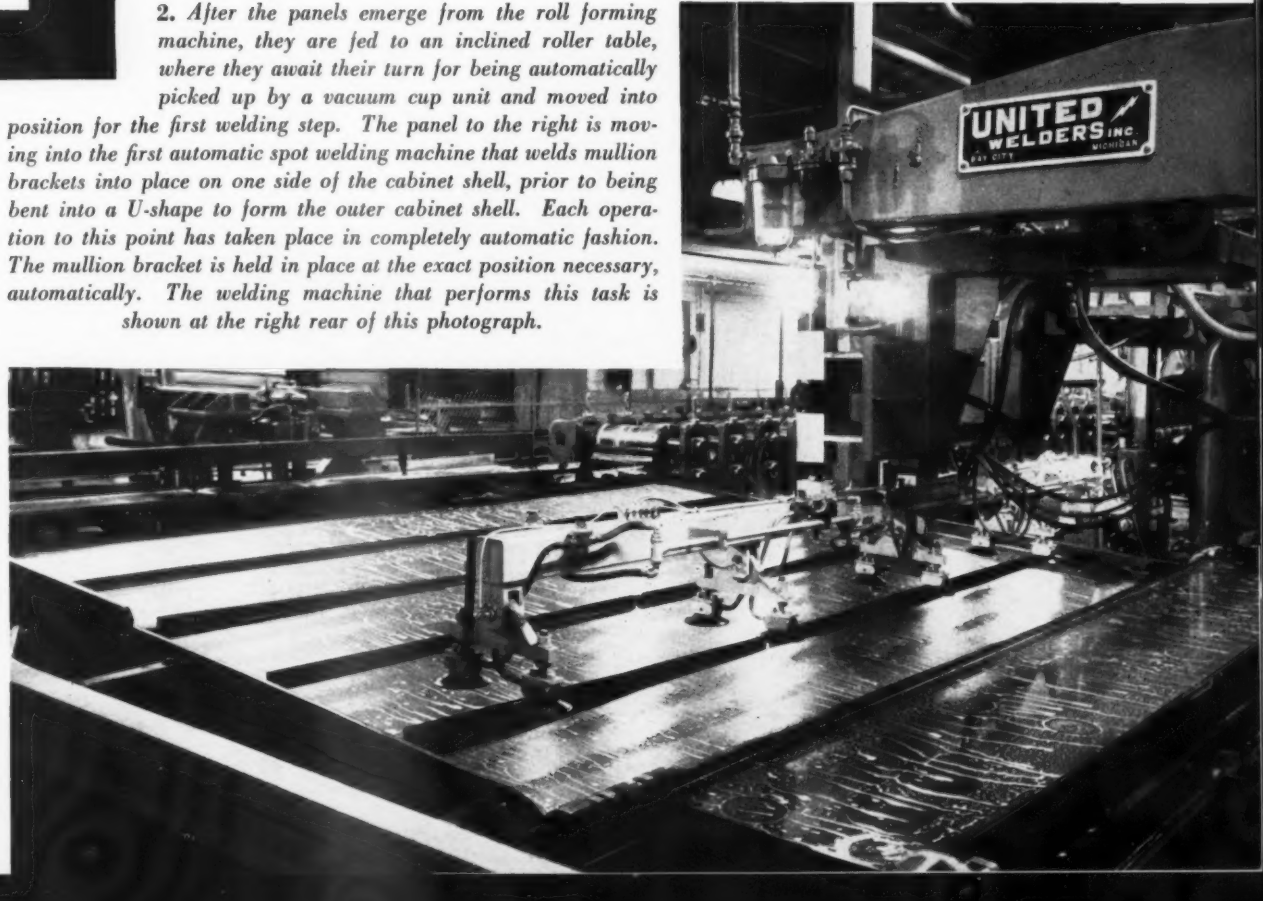
3. *Immediately after the mullion brackets are welded to one side of the outer shell, the panel moves to the combination tangent bender and welder-planishing machine. Shown at the right in this photograph is V. E. Rice, vice-president in charge of production and, at the left, is K. E. Anderson, vice-president and Muskegon Heights plant manager. Mr. Rice's hand is on one of the controllers for a weld-planishing machine. As soon as the panel reaches a limit switch, indicating that it is in position for a tangent bender to go into operation, the fulcrum of the machine moves downward while the sides of the cabinet are brought to a vertical position by the triangular shaped channels shown just in front of Mr. Anderson. As soon as the cabinet is bent into a U-shape, the two welders shown mash-weld the notched corners of the cabinet together. These mash-welds are then planished, leaving only a very slightly noticeable ridge that is later planed down. Where it formerly took from 4½ to 6 hours to change from manufacture of the 28-inch cabinet to the 31-inch wide cabinet, or vice versa, it now takes 45 minutes to switch the tangent bender from one cabinet to another. The tangent bender is so designed with automatic hydraulic valves that it enables relocating the die blocks in this short space of time for the other sized cabinets. As soon as the cabinet is planished, the light colored mechanical claws at the top of the cabinet grip the ends and transfer it to the machine shown at the right, which automatically welds the back panels to the cabinet.*

4. *This view at the left shows the mechanical claws moving the cabinet sides into the automatic spot welder that welds the back panel to the cabinet. The mechanical claws hold the cabinet sides in position against the back panel which is automatically and simultaneously welded at 82 points. Also shown in this view are the tangent bender and welding-planishing machine at the extreme left. The back welder in the foreground is used for welding panels to one cabinet size, while the other shown just to the right of it is used for the other cabinet size. In the upper right hand corner of this view can be seen control lights that indicate at a glance if any one of the 22 stations on the automated cabinet line is not functioning. Each of these stations is further controlled by a complete, lighted control panel — each light corresponding to one of the circuits controlling the operation of the station. The operator can then pinpoint the trouble circuit and, in a minimum of time, correct the difficulty.*



1. *This is a view of a cabinet panel coming from the first operation in the automated cabinet line. The function of the press shown in the middle background is to blank, pierce, and notch each piece of raw stock that forms the outer cabinet of the refrigerator. The dimensions of the sheets are of either of two sizes, depending upon the cabinet being fabricated at the time. One measures 151 inches in length, for the refrigerator that measures 28 inches wide by 61½ inches high, and the other basic size sheet measures 168 inches long, for the refrigerator cabinet that is 31 inches wide and 68½ inches high. The blanked, notched and pierced panel is shown here emerging from the jaws of the press and moving down by a gravity roller conveyor to the bed of powered pulleys that drive rubber belts to supply the motive power, sending the sheet into the roll forming machine shown in the left foreground. This roll forming machine returns the front flange of the refrigerator cabinet into a U-shaped channel of double thickness at the rate of 150 units per hour.*

2. *After the panels emerge from the roll forming machine, they are fed to an inclined roller table, where they await their turn for being automatically picked up by a vacuum cup unit and moved into position for the first welding step. The panel to the right is moving into the first automatic spot welding machine that welds mullion brackets into place on one side of the cabinet shell, prior to being bent into a U-shape to form the outer cabinet shell. Each operation to this point has taken place in completely automatic fashion. The mullion bracket is held in place at the exact position necessary, automatically. The welding machine that performs this task is shown at the right rear of this photograph.*



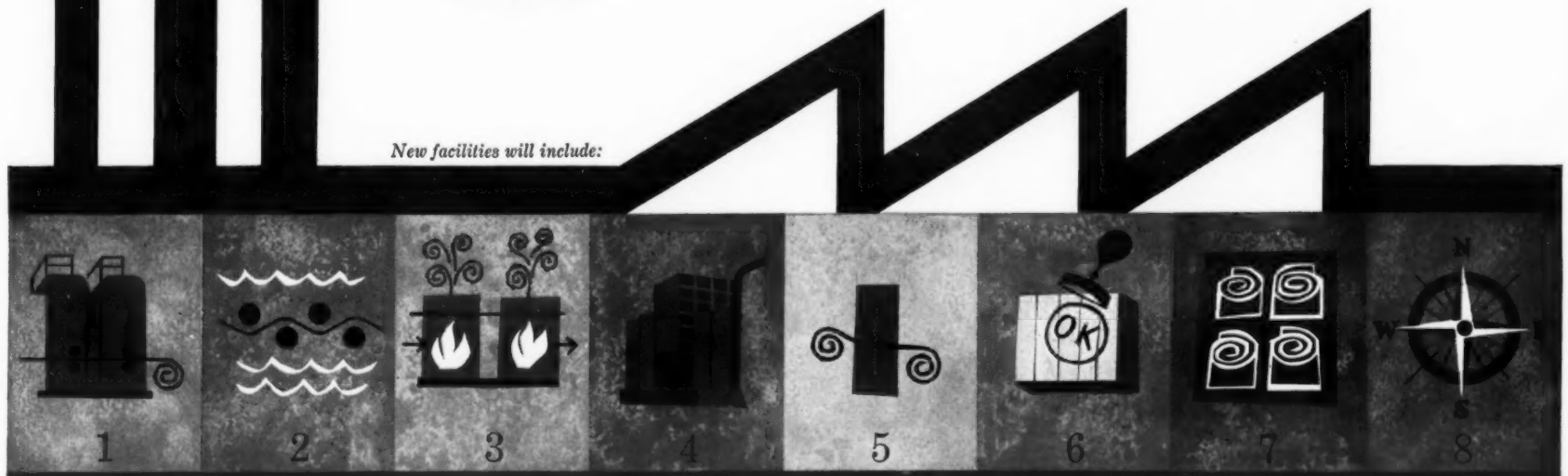
MEASURING UP TO YOUR FUTURE NEEDS...

Inland will soon provide a 50% increase in cold rolled sheet and strip capacity... By the end of the year, Inland will add close to a half million tons to its existing capacity for cold rolled sheet products. The increase in cold rolled sheet production was the main purpose behind Inland's current expansion program which will bring total yearly steel-making capacity up to 6,000,000 ingot tons next year.

The expansion project, launched in late 1955 and now nearing completion, is in keeping with Inland Steel's continuing policy of anticipating future needs of steel users in the fastest growing steel consuming area in the country . . . the Midwest.

Inland's new cold rolled sheet mill, housing the most modern equipment available for the production of uniform, high quality cold rolled sheets and coils, will be one of the fastest and most efficient mills of its type in existence.

New facilities will include:



1. 4-stand tandem cold reduction mill
2. Pickling line
3. Continuous normalizing line
4. Annealing furnaces
5. Temper mills
6. Finishing department
7. Coil storage
8. Shipping department

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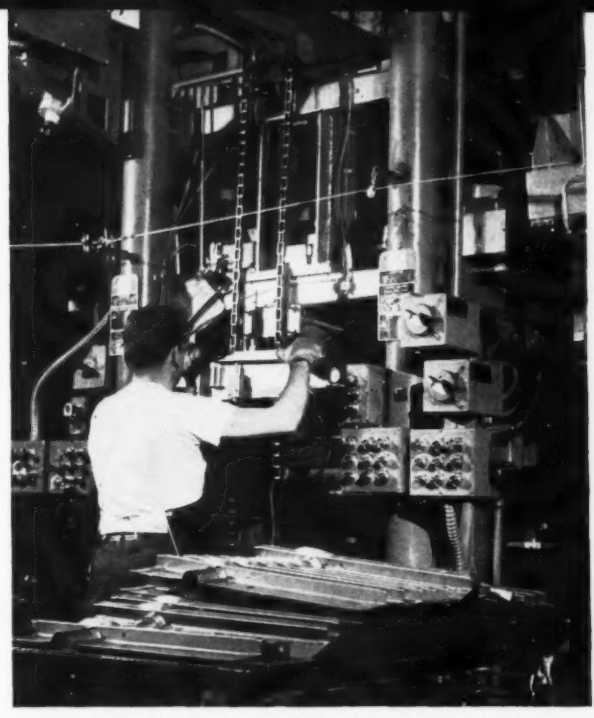
ONE OF THE OUTSTANDING developments in the fabrication of refrigerators is the new operation at Norge Division, Muskegon Heights, Michigan plant. Reduced production line change-over time and good quality are the outstanding features. Patterned after automotive type automation equipment, the Borg Warner Corporation division has sliced change-over times of main refrigerator components — outer cabinet shell, tank (food compartment), and door — as much as 14 hours.

According to V. C. Rice, Norge vice president of manufacturing and engineering, the change-over time on the cabinet assembly line has been cut from 18 to 4 hours. This savings in time provides Norge with "flexible automation," according to Rice. He feels that this manufacturing versatility is a must in these days of rapidly changing conditions on the retail scene.

Quality high

Uniformity and quality typify the entire fabrication operation and result in a fast-moving final assembly line. The automation system at Norge is said to be highly accurate in achieving precision dimensions. The automated equipment allows Norge to produce mass quantities of four different refrigerator models with only the fabrication of two subassemblies. Of the three completely automated lines, of lengths varying from 50 to 150 feet, the cabinet line is pictured here and on the preceding pages. Production is at the rate of 150 per hour.



5. *This view shows the machine that spot welds the cross rail mullions into position on the cabinet. The operator here loads the cross rail onto an automatic conveyor feed, which carries the part to its proper location and, held in position in the cabinet until it is automatically spot welded into place.*

6. *The final operation in the cabinet fabricating line is at this station where the bottom machine compartment panel is automatically loaded into a fixture that holds it in place in the cabinet while it is being spot welded. The cabinet can be seen at the right in this view.*

7. *This photograph shows the unloading station where the completed cabinet is placed on a working table and moved to finishing.*

Record attendance at Appliance Tech

THE 9TH ANNUAL Appliance Technical Conference, sponsored by a subcommittee of the American Institute of Electrical Engineers, enjoyed one of the best attendances in its history. Held May 26-27 at the Morrison hotel in Chicago, the general consensus was that much was accomplished, especially as to what the Appliance Sub-Committee should be doing to assist in the improvement of appliances.

About 230 engineers, development men and researchers, representing a broad group of appliance plants, were present. A very good job was done by those who were responsible for organizing the conference.

The keynote address was delivered by W. E. Mahaffay, vice president of Whirlpool Corp. In the address, "Research, the engineer, and the appliance industry," he pointed out that those engineers present at the meeting are one of the keys to the success of the appliance industry. Mahaffay stated that even though the major appliance industry ranks next to automobiles, value-wise, in the consumer goods industry, the relative basic research done by the industry is not as great as it should be. $10 billion was spent by the industry in 1957 for research development, he further stated, which corresponds to 2 per cent of the gross national product. According to Mahaffay, the only real advance in modern appliances is in the "trim."

Agitators and tumblers

Mahaffay cited several examples to prove his point. First, he pointed out that the washing machine has used either one of two actions for washing—agitator or tumbler. He feels that more could be learned about how dirt should be cleaned from clothes, based on physics and chemistry. The physics and chemistry of the washing cycle are yet to be thoroughly investigated*.

W. E. Mahaffay, vice president, Whirlpool Corp. delivering keynote address.

SESSION I — Left to right, J. W. Thomas and E. J. Woodfin, Whirlpool Corp.; E. J Zimmer, Director, City of Chicago Plumbing Testing Laboratory; and H. H. Watson, General Electric Co.

The black banana

Since the invention of the hermetic compressor for use in a refrigerator, there have been no basic technical improvements in the ratings of Btus per watt hour. Perhaps greater improvements could be made in compressors, he suggested.

He feels that the self defroster, butter warmer, and other so-called "gimmicks"

*It should be noted in connection with our publication of the candid remarks by Mr. Mahaffay that MPM goes to the manufacturers only and not to distributors or dealers. Eds.

NINTH ANNUAL AIEE—SPONSORED MEETING

stress standardization, safety, and basic research at Chicago meeting

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

Technical Conference

SESSION III Panel Discussion on standards — Left to right, above G. E. Schall, Underwriters' Laboratories; L. D. Price, NEMA; Miss Willie Mae Rogers, Good Housekeeping Institute; D. C. Krammes, The Hoover Co., presiding chairman and chairman of the Domestic Appliance Subcommittee; W. A. Lewis, Illinois Institute of Technology, Chairman of the A. I. E. E. Standards Committee; H. C. Koenig, Electrical Testing Laboratories; F. E. Hodgdon, American Gas Assn.; and F. J. Schlink, Consumer's Research, Inc.

have actually decreased food preservation capabilities of the electric refrigerator. In many cases, he feels that the greater number of features to be found in a refrigerator, the less effective is the performance. One of the best examples of the poor operating qualities of refrigerators, Mahaffay asserted, is that bananas are shipped under refrigeration, but cannot be put into a refrigerator. Home refrigeration, according to Mahaffay, does not allow the banana to retain its original flavor and appearance.

For two decades, Mahaffay stated, we have offered the consumer only prettier and prettier equipment. He also feels that the engineers have become the "handmaidens" of the salesmen. Decision on products that go to market has been turned over to the sales department, in his opinion. Another fact is that technical importance has been increasingly subordinated to price. Underlying proof of the ending of the marketing era is that the silent consumer revolution is now taking place. Liquid assets are the highest in history, but the consumer is not disposed to buy, because he doesn't think he is getting full value for his money, according to Mahaffay.

Discuss grounding appliances

H. H. Watson of General Electric, Bridgeport, Conn., presented a paper to start the first session, presided over by G. E. Schall, entitled "Higher voltage and grounding—an appliance problem." One of the most pressing problems in the appliance industry is proper grounding to prevent electric shocks when using appliances. According to the National Electrical Code, exposed metal on the appliance is the chief reason for grounding the appliance to prevent electrical potential occurring above the ground on the enclosure of the appliance. Of course, the purpose of grounding is, first, to protect persons from the hazards of shock and, second, to protect equipment from overstressed insulation.

To protect against shock from fixed or portable appliances, the commonly-used method is to ground the exposed metal parts of the appliance. This method is the preferred method for all fixed appliances, but only for some portable appliances, and then under specific conditions. These conditions were not stated. Portables such as lamps, heaters, fans, toasters, radios, TVs, skillets, roasters, and other similar domestic appliances are not required to be grounded, and UL, in its standards, does not require grounding-type cord sets. However, proposals are now before the electrical section of NFPA to include some added locations where grounding outlets shall be installed for portable appliances.

Watson made the recommendation that such an appliance as the electric range should be supplied with a grounding type of convenience outlet. It was suggested by him that perhaps convenience outlets should not even have a place on the range. However, that is something that should be taken under consideration by the manufacturers.

SESSION II — Left to right, J. P. Laughlin and E. A. Baillif, Whirlpool Corp.; E. P. Carter, The Gates Rubber Co.; Dr. R. Plunkett, General Electric Co.; and T. T. Woodson, Waste King Corp.

Electrified fibrous air filters

J. W. Thomas, Whirlpool, gave an interesting paper on air-conditioner filters using electrified fibers. It was found that air-conditioner filters one inch thick can be made to have 50 per cent efficiency in filtering cigarette smoke at 200 feet per minute. By using glass fiber charged with electrostatic precipitators, this efficiency can be accomplished at less than 0.05 inch mercury pressure drop. It was found in the study that the efficiency of glass fiber packed precipitator is considerably greater than that calculated from the efficiency of each effect separately. In other words, the improvement was synergistic.

Noise control gets the spotlight

During session 2, presided over by B. F. Parr, Westinghouse Electric Corp., Dr. R. Plunkett, G.E., delivered a paper entitled "Noise Control of Domestic Appliances." Dr. Plunkett pointed out several basic laws governing noise and sound. One of the most important points he made was that the actual amount of noise produced by any appliance is meaningless until it is related to its environment and use. An electric clock that stands by a bedside table must be many times more quiet than an air-conditioner which is making the customer more comfortable. In previous years, Plunkett stated, we have thought that a vacuum cleaner that did not have a powerful sound would be suspected of not doing its job, but now, in a more sophisticated society, we realize that noise cannot add sales appeal. However, it is still true that the large air-conditioner in the large and busy store may be allowed to be noisier than the window unit in a small and quiet bedroom.

Customer reaction is influenced still further by past experience. There is little objection to a certain amount of noise from dishwashers; "they always have been that way." On the other hand, Plunkett added, over the years, refrigerators have been made remarkably quiet; the consumer expects them to become even more quiet.

The character of noise in the broad sense is very difficult to assess. Everyone is in favor of musical tones, but one man's music is another man's dissonance; many people do not appreciate modern symphony. In short, the annoyance quotient of noise depends on background noise, frequency content, magnitude, duration, and past experience.

In a report entitled "Noise reduction in food waste disposers," T. T. Woodson, Waste King Corp., demonstrated how the combination of a polystyrene shell around the waste disposer and a glass fiber lining for the shell combined to reduce the noise inside the waste disposer to a bare minimum. A synergistic effect was noted here, also, in that the sound reducing effect of the polystyrene shell and the glass fiber blanket, measured separately, were less than the effect of the two together.

E. A. Baillif and J. P. Laughlin, Whirlpool Corp., gave their recommendations for a testing, analysis, and evaluation of noise in household refrigerators. The latest type octave band analyzer, electronic sound equipment was recommended as being extremely useful in analyzing sounds from refrigerators.

In a talk entitled "Thermal protection consideration of the 1958 appliance motors," by V. J. Vaughan and A. P. White, Spencer Thermostat Division, Metals & Controls Corp., the summary was that present day requirements for appliance motors call for more complete protection. The new, higher temperatures allowed by Underwriters Laboratories will increase testing problems. White, who delivered the paper, further stated that present temperature measuring techniques are inadequate for high rates of temperature rise inherent in many appliance-type motors.

SESSION IV — Left to right, J. A. Deubel, General Controls Co.; H. E. Morrison, Whirlpool Corp.; P. W. Bush, Westinghouse Electric Corp.; H. Levine, General Electric Co.; and presiding chairman, T. H. Cline, Newark Stove Co.

Harold Bunte, Commonwealth Edison Co., chairman of the conference operating committee.

Panel discussion on standards

In a most interesting panel discussion, W. A. Lewis, chairman of the AIEE standards committee, H. C. Koenig, Electrical Testing Laboratories, Inc., L. D. Price, National Electrical Manufacturers Assoc., G. E. Schall, Underwriters' Laboratories, Inc., F. E. Hodgdon, American Gas Assn., Inc., Miss Willie Mae Rogers, Good Housekeeping Institute, and F. J. Schlink, Consumer's Research, Inc., formed a panel discussion on "The need for, and the problems in, developing standards for domestic appliances."

Homemakers' viewpoint

Miss Rogers feels that too many engineers shut themselves into their ivory towers and dream up appliances that *may* be practical ten years from now — or else work on whatever the sales department decides must be in next year's line. She further stated that "year after year this consumer copes with appliances that cost more and more money and, in many cases, give less and less satisfactory service." She said that for more than fifty years Good Housekeeping Institute has operated under the concept that minimum performance standards must be observed in its investigations. Miss Rogers feels that non-rusting finishes, electrical safety, adequate insulation, durability of parts, and low operating costs were points to be considered in any standardization program.

"The rumor that appliances are being built for only a limited life — to serve the great god, obsolescence, does the industry harm, and there's no point in cit-

to Page 38 →

TINT-TANIUMS

GIVE RCA WHIRLPOOL REFRIGERATORS

manufactured by Whirlpool Corporation

MORE SALES APPEAL

PROCESSING LINERS AND VEGETABLE CRISPERS IN TINT-TANIUMS AT WHIRLPOOL CORPORATION.

Tint-Taniums are easily applied by either spraying or dipping (without streaking and without oxide separation) depending upon the requirements of individual parts involved. These pictures taken on the refrigerator production line at Whirlpool Corporation, Evansville, show liners and vegetable crispers being processed in Tint-Taniums.

an exclusive Chicago Vit Development

To capture its share of today's style-conscious, consumer market, Whirlpool Corporation has incorporated fresh sales appeal in its 1958 line of refrigerators in a number of ways. One of them is through the use of Tint-Taniums on liners and vegetable crispers. These colored frits, made exclusively by Chicago Vit, provide a number of distinct production advantages foremost among them being unequalled color stability. They are handled as easily as white titanium frits, and completely eliminate the chance for human error that exists in systems where colors are added at the mill. Tint-Taniums also bring you a number of distinct economic advantages. So, if you plan to use colors in your new products, you'll find it profitable to choose Tint-Taniums. There's nothing else like them!

Tint-Tanium is a copyrighted name

Chicago Vitreous **CORPORATION**

A Division of The Eagle-Picher Company

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1918-1958 • 40 YEARS OF SERVICE TO THE PORCELAIN ENAMEL INDUSTRY

ing the automotive industry as an example! It will take many years of 'education' and many extensive and expensive advertising and merchandising campaigns before that revolution is accomplished! Any industry standards which will help to create consumer confidence in appliance quality will benefit every manufacturer," added Miss Rogers.

Standards for refrigeration, ranges and washing machines

Adequate temperatures for good storage of frozen foods in evaporators and freezer sections is one of the standards that should be considered for refrigerators. Adequate temperature on door shelves and in egg compartments for storage of eggs and milk should be standardized, Miss Rogers continued. Minimum standards should specify the extent to which certain materials may be used in the refrigerator and the kind used, according to Miss Rogers. "This is to prevent the flood of flimsy gadgets and accessories that serve only to plague the user," she said.

Miss Rogers went on to criticise other appliances, and on ranges she stated that certainly there should be a standard which requires broiling ovens to be high enough so that the user doesn't have to lie flat on the floor to see into it. On washing machines, lids should meet a non-rust standard. "Now that manufacturers and advertising copy writers have succeeded in making women lint conscious, they should make those lint filters easy to clean," said Miss Rogers. She concluded that she and her husband have decided that modern appliances are a cheap assortment of parts hidden by ridiculously glamorous exteriors, and sold through over-rated advertising and discount price tags. She also said she hated the words 'standard measurements,' especially as applied to working heights and shelf spacing. The men who make these so-called standards have no consideration for what the individual woman wants!"

Safety first

H. C. Koenig, manager of Electrical Testing Laboratories, Inc., said that nothing should be stressed more than safety in appliances. Koenig felt that it didn't make any difference how efficient or durable an appliance was, if the user was not around to enjoy it. "Standards for safety" are the watchwords that should be used by a committee to set up standards. It was his opinion that standards have been too long in coming to the industry. He felt that Committee C-70 of the American Standards Association should forge ahead and decide on standards for appliances, rather than waiting for another group to propose standards. He said that the appliance technical sub-committee of AIEE can do much to further this end. He said that some manufacturers have told him that it is impossible to write a specification on many of the household appliances, because designs change so frequently. To this he disagreed. He stated that in any standard for household appliances everyone is interested in performance, durability, and safety. You may change the shape of a toaster; you may change the plastic used on a percolator; you may decide to use a different thermostat on a flatiron or heating element in a waffle iron or clothes dryer; but fundamentally the requirements for performance, for durability, and safety will be unaltered, Koenig concluded.

In the last session, presided over by T. H. Cline, Newark Stove Co., Harold E. Morrison, director of product engineering, Whirlpool Corp., gave a most interesting talk entitled "A new look at engineering kitchen appliances." Morrison cited some examples of what he considered poor engineering practice. For instance, timers do not have enough contact pressure. Timers should never be under 30 grams, and 40 grams is much better from the standpoint of pressure. He cited a ridiculous application where an engineer wired an appliance with enough loose wire to permit a drip loop; that is, water will run down the wire, drip off, leaving the dry wire to continue up the main component. And then along comes the cost reduction man who stretches the wire tight, with the result that the water runs directly into the coil. This happened last summer in several makes of air conditioners, according to Morrison. He said he saw several air-conditioners which ran the condensation into the top of the motor. According to Morrison, the results were unhappy customers and no profit.

Morrison mentioned the fact that there isn't even a standard that tells how much weight is allowable to prevent a refrigerator from tipping over. Surprisingly enough, many refrigerators are easily tipped over when overloaded in the door. Another interesting point brought up by Morrison was that a law pertaining to latches to prevent children or any other person from being locked up in a refrigerator only covers refrigerators, and since refrigerators are defined as those chambers which operate above 32° F., that means that freezers aren't mentioned. It seemed silly in his explanation that freezers have been excluded from this law. One of the conclusions Morrison made which might typify the attitude of the engineers at this most successful Appliance Technical Conference was that many businesses in the past were run to suit themselves — forgetting public desires, such as top performance, economical operation, safety, aesthetics, etc. Now these businesses are just memories.

Select Cleveland for '59 conference

M. A. Fuller, Whirlpool Corp., is the new chairman of the committee for 1959. Fuller announced that the 1959 conference will be held in Cleveland at the Hotel Carter. It will be held sometime during the last two weeks in May, the final date yet to be announced.

Officers of the Domestic and Commercial Applications Committee of the A. I. E. E. Left to right are W. R. Crawford, Secy., Whirlpool Corp.; B. F. Parr, Vice Chairman; G. E. Schall, Jr., Underwriters' Laboratories, Chairman; and M. A. Fuller, Whirlpool, new chairman of the subcommittee on Domestic Appliances.

Guthrie heads slate

→ *from Page 16*

Wilson made specific reference to an individual company, and showed where market survey work could be made almost instantaneously by a set-up through which the five best distributors of the company could be interviewed by phone and, in turn, each of these five distributors be responsible for interviewing five each. By this method, within a period of eight hours, a field survey on a matter of prime importance can be made.

In referring to quality versus quantity of appliance dealers, he pointed to the fact that a manufacturer with 22,000 appliance dealer outlets, cut these to less than 5,000 with a resulting 18-per cent gain in business.

Wilson urged that the manufacturers of component parts play a stronger part in the appliance business. He criticised the component manufacturers for not contacting top management, and for not getting their sales story over to the finished product salesman. "Mixing valves and timing controls," he said, "have lost their identity." He suggested that the component manufacturers use their advertising to help sell manufacturers on the use of their product, and also to help them (the finished product manufacturers) sell by supplying sales data.

Will it make a sale?

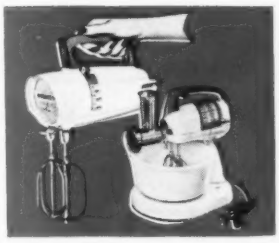
Jack S. Pettersen, of Jack Pettersen and Associates (advertising agency), held the attention of his audience from the point of his first statement in which he said, "The key test to a successful advertising campaign is 'Will it make a sale?'"

Pettersen has had long experience in the sale of home appliances, both at the manufacturer and retail levels. He was associated with the well known Polk Brothers in Chicago, and referred to the growth of this "once-small" company to the present level of $61 million annual sales. According to this speaker, this was built on psychology, on customer pride, and on consideration . . . not alone on price.

In the manufacturer field Petterson has been associated with such well known companies as Whirlpool, Motorola, and Norge.

Among the illustrations of the effectiveness of showmanship in selling, Pettersen referred to the Westinghouse "daily double," a recent sales campaign in the Chicago area. The results of a six weeks' campaign in this instance showed a 29.7-per cent increase in sales

to Page 84 →



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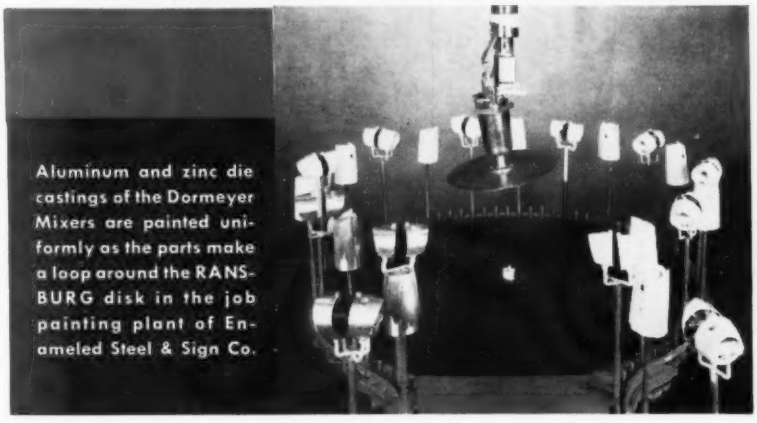

Aluminum and zinc die castings of the Dormeyer Mixers are painted uniformly as the parts make a loop around the RANSBURG disk in the job painting plant of Enameled Steel & Sign Co.

● Enameled Steel & Sign Co. is able to serve many customers like Dormeyer, for their Chicago job painting plant is equipped with modern and efficient finishing facilities for producing high quality, high volume painting.

Electrostatic spray painting has practically replaced all other methods here, for the flexibility and near 100% efficiency of the Ransburg No. 2 Process enables Enameled Steel to serve many manufacturers of a wide variety of products. And, this with a comparatively small labor crew!

Today—with Ransburg No. 2 Process—Enameled Steel is realizing more than 60% paint savings over former hand spray. Rejects have been cut to less than 1%, for the Ransburg No. 2 Process applies a uniform, high quality finish never before obtainable with old-fashioned painting methods.

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YOU PAINT METAL
YOU FINISH ALUMINUM
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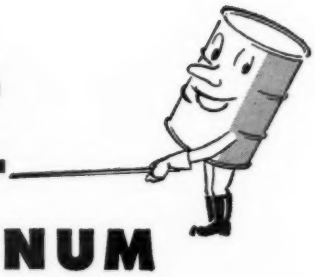

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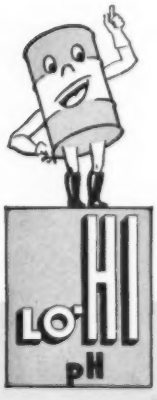

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J. A. Schiavo, Chairman of NEMA*'s Statistical and Market Analysis Committee, is shown above addressing the Major Appliance Division. Mr. Schiavo is Manager—Market Research, Appliance Division, Philco Corporation.*

Call on major appliance makers to combat competition

market analyst advises Major Appliance Division to combat gas; elect officers for the coming year

ELECTRIC APPLIANCE COMPANY executives present at Ponte Verda, Florida June 2-4 for the annual convention of the Major Appliance Division of the National Electrical Manufacturers Association, received expected small comfort from a review of this year's sales* but, what is more to the point, heard one of their top market analysts place as much blame for slumping business on the competition as on economic conditions.

To the electrical industry, the competition is gas. And gas, according to the speaker, J. A. Schiavo, Chairman of NEMA's Statistical and Market Analysis Committee, may be piped to some 46,000,000 customers by 1965 as the "gas industry goes all out to add 1,000,000 customers per year".

"The electrical appliance industry is being pushed hard by the gas industry which is spending millions of dollars annually to advertise and promote its products. We have lost ground in sales of three major appliances, and our progress in the important range market has been stopped. It is up to the electrical industry to reverse this trend," declared Mr. Schiavo who, in addition to his NEMA position, is manager of Market Research of Philco Corporation.

Bright spots emerging in the "competitive fuels picture, so far as the electrical industry is concerned, show that electricity dominated the clothes dryer market with 69% of the business last year, and that, of the 34% of new housing starts which included a range in the selling price, electric ranges accounted for 56% of the total installed. Also built-in range units were reported by Mr. Schiavo to have outsold gas by more than 2 to 1 for each year from 1955 to 1957.

Inadequate wiring factor

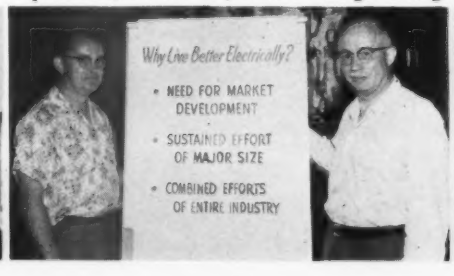
Another problem facing the electrical industry in its attempt to increase sales is that of "inadequate wiring." The NEMA Committee head stated, adding that—"although we have set 100 ampere service as the goal for each home, 32% of the new housing starts do not meet this standard."

Looking at general business conditions, the Philco executive said "the growth of the appliance market depends directly upon the growth of the economy."

"Those of us in the appliance field are more sensitive to an income decline than most industries," Mr. Schiavo said, "because our industry is faced with the problem of *deferment*. "That is, pur-

Household Sink Units Section — Left to right — E. P. Van Sciver, Product Manager, Electric Ranges, Disposers and Dishwashers, Philco Corp., Vice Chairman, and F. A. Lowery, Manager, Water Heater and Kitchen Utilities Dept., Westinghouse Electric Corp., Chairman and Vice Chairman of the Electric Water Heater Section, and D. W. Proulx, National Products Manager, Water Heaters, Rheem Mfg. Co., Chairman.

Major Appliance Division I Left to right — John A. Hurley, Vice President-Merchandising, Whirlpool Corporation, Vice Chairman, and Charles K. Rieger, Vice President and General Manager, Appliance and TV Receiver Division, General Electric Company, Chairman. Both were reelected to their present offices. Electric Range Section II Left to right — R. P. Brook, Manager, Range Department, Electric Appliance Division, Westinghouse Electric Corporation, Chairman, and W. R. McDowell, Manager, Range Engineering, Hotpoint Company (a Division of the General Electric Company), Chairman, General Engineering Committee. The newly elected Vice Chairman, R. T. Musselwhite, Electric Range and Electric Water Heater Sales Manager, Norge Division, Borg-Warner Corporation, was unable to attend the meeting. Household Refrigerator and Freezer Section III Left to right — W. R. Arbuckle, Manager, Refrigerator-Freezer Department, Electric Appliance Division, Westinghouse Electric Corporation, Vice Chairman; E. B. Barnes, General Sales Manager, Kelvinator Division, American Motors Corporation, Chairman, and F. J. Hausfeld, Chief Engineer, Whirlpool Refrigerators-Freezers, Whirlpool Corporation, Chairman, General Engineering Committee.


Why Live Better Electrically?
• NEED FOR MARKET DEVELOPMENT
• SUSTAINED EFFORT OF MAJOR SIZE
• COMBINED EFFORTS OF ENTIRE INDUSTRY

chase of our products can be postponed one, two or three years.

**EDITOR's Note:* Information released shortly after Mr. Schiavo's talk revealed that May showed some definite improvements in this year's business picture. For example, May business on food freezers at all levels (factory shipments, distributor shipments and retail sales) was not only much improved over April of this year, but also was much better than in May of 1957. On refrigerators and electric ranges, sharp increases were registered in May over April, and factory and retail sales on these two appliances were also higher than in May of last year.

(see MPM Statistics on page 74)

It is at this point, said Mr. Schiavo, that the electrical appliance industry finds itself in competition, not only among its own products, but with gas appliances. And it is here too that the electrical industry runs up against a merchandising, promotion-minded competitor which is spending $19 billion in a 10-year expansion program to add 1,000,000 new customers per year. This amount, Mr. Schiavo pointed out, is in excess of the millions being spent annually for product promotions.

Re-elect Rieger chairman

Charles K. Rieger, Louisville, Kentucky, Vice President and General Manager, Appliance and TV Receiver Division, General Electric Company, was re-elected chairman of the Major Appliance Division, National Electrical Manufacturers Association, and its constituent products Sections, as the Division closed its annual convention by naming new officers for the coming year. The 3-day convention opened on June 2.

John A. Hurley, St. Joseph, Michigan, Vice President-Merchandising, Whirlpool Corporation, was reelected vice chairman of the Division.

The following officers were elected by the Division's product Sections:

Electric range

Chairman — R. P. Brook, Mansfield, Ohio, Manager, Range Department, Electric Appliance Division, Westinghouse Electric Corporation.

Vice Chairman — R. T. Musselwhite, Chicago, Illinois — Electric Range and Electric Water Heater Sales Manager, Norge Division, Borg-Warner Corporation.

Chairman, General Engineering Committee — W. R. McDowell, Manager, Range Engineering, Hotpoint Company (a Division of the General Electric Company).

Household refrigerator and freezer section

Chairman — E. B. Barnes, Detroit, Michigan, General Sales Manager, Kelvinator Division, American Motors Corporation.

Vice Chairman — W. R. Arbuckle, Columbus, Ohio, Manager, Refrigerator-Freezer Department, Electric Appliance Division, Westinghouse Electric Corporation.

Chairman, General Engineering Committee — F. J. Hausfeld, Evansville, Indiana, Chief Engineer, Whirlpool Refrigerator-Freezers, Whirlpool Corporation.

Household sink units section

Chairman — F. A. Lowery, Columbus, Ohio, Manager, Water Heater and Kitchen Utilities Department, Electric Appliance Division, Westinghouse Electric Corporation.

Vice Chairman — E. P. Van Sciver, Philadelphia, Pa., Product Manager, Electric Ranges, Disposers and Dishwashers, Philco Corporation.

Chairman, Technical Committee — A. R. Kays, Connersville, Ind., Manager, Electro Mechanical Research and Development, A. K. Division, Avco Manufacturing Corp.

Electric water heater section

Chairman — D. W. Proulx, Chicago, Illinois, National Products Manager — Water Heaters — Rheem Manufacturing Company.

Vice Chairman — F. A. Lowery, Columbus, Ohio, Manager, Water Heater and Kitchen Utilities Department, Electric Appliance Division, Westinghouse Electric Corporation.

Chairman, Technical Committee — J. H. Reifenberg, Columbus, Ohio, Manager, Water Heater and Dishwasher Engineering, Appliance Engineering Department, Westinghouse Electric Corporation.

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"A HEATING ELEMENT THAT HEATS UP FASTER"
"a heating element with even heat distribution"
"A HEATING ELEMENT THAT LASTS LONGER"
SALES MINDED MANUFACTURERS NOW HAVE THE ANSWER . . .
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WRITE TODAY FOR YOUR COPY OF NEW, 4 PAGE, "ADAPTATHERM" FOLDER—PACKED WITH FACTS.
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This One Is Producing 4000 lbs. Per Hour With a Conveyor Speed of 8 fpm.

Here is one more sparkling example of well above average output, at much below normal costs, with excellent match of color and hardness of finish.

Located in the Mayville, Wisconsin plant of Maysteel Products, Inc., this complete Burdett Finishing System consists of a 3-stage washer, a single pass dry-off oven—a 2-pass prime oven—and a 2-pass finish oven.

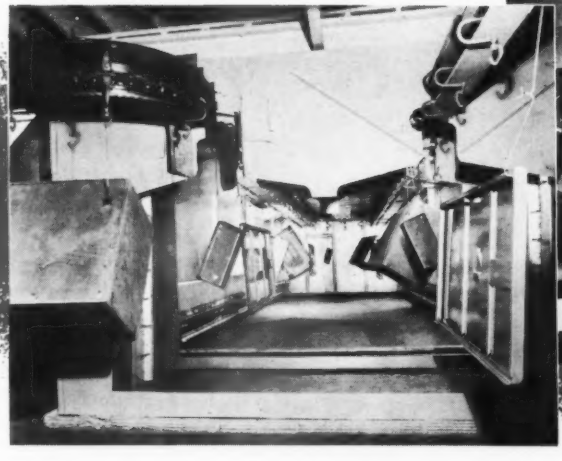
The 3-stage washer features a stainless steel immersion heating system which provides solution temperature rise of 5° per minute.

Production of this plant is largely on a job basis, including heavy transformer tanks, requiring a very hard finish—heavy lathe benches finished with a wrinkle finish—and varied metal enclosures and products.

Fuel is propane gas.
Conveyor speed—8 FPM.
Cost of $6.50 per hour is average over a six month period, for the entire system.

Unusual Results? That they are, yet results that can be expected from every Burdett installation—and most important to you in meeting today's razor-edge competition.

Whether you are considering a completely new finishing system—an addition to your present layout—or the renovating of your old system—consult Burdett for the engineering answer with the bonus values—either "Radiant" or "Convection"



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COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT" SYSTEMS OVENS HEATERS
AIR MAKE-UP UNITS SPRAY BOOTHS AND WASHERS

How Maysteel finishes top quality metal products

new organic finishing operation features single conveyor, radiant heat ovens, paint heaters, and downdraft water wash spray booths, to effect a 67-per cent increase in painting efficiency

AN MPM STAFF FEATURE

EXCLUSIVE MPM PHOTOS

Maysteel Products, Inc., with plants and executive offices in Mayville, Wis., and sales offices in Milwaukee, recently installed a new organic finishing operation in one of its Mayville plants, for which excellent returns in quality and quantity of production, and decreased production costs, have already been recorded. The new finishing operation was designed to provide economical production on a straight line basis, while at the same time retaining the flexibility needed in a contract plant.

Maysteel offers a complete service in designing, engineering, fabricating, and finishing — from rough idea to finished product. The company specializes in the fabrication and finishing of sheet metal component products, and in contract manufacturing of a variety of completely-assembled products. A design engineering staff is maintained to assist the customer on a new product and to keep product design aligned with production facilities. An extensive stock of tools and dies often provides worthwhile savings for the contract customer. Special finishes and finishing techniques are often developed to carry out the design requirements of the product manufactured.

For instance, the latest pastel colored, thermosetting acrylic enamels are used on a line of hospital cabinets. A complete range of wrinkle enamels, lacquers, and hammertone finishes can be applied to customers' orders.

Wide variety of products

Among the many different products turned out by Maysteel on contract are vending machines, office equipment, hospital cabinets, sink cabinet assemblies, automotive grilles and hoods, and many other products fabricated of the lighter gauges of sheet steel, stainless steel, aluminum, and magnesium. In addition, heavier production includes circuit breaker tanks, lathe benches, and front shrouds for tractor-shovels.

Of the four plants located at Mayville, two have organic finishing facilities. One of these two plants has a finishing line used only for limited production items and special jobs. This plant includes both vapor degreasing and washer cleaning facilities, and an infra-red oven for baking. Other equipment is conventional and is used primarily for pilot models and custom work.

The comparatively-new finishing line described in this article is used for production items. The layout for this finishing operation was designed to get maximum productivity, while at the same time retaining flexibility in the types of work and kinds of finishes to be run.

In observing the finishing operation, cleanliness of the entire department was evident as an outstanding feature. As a matter of fact, on the day that the MPM editors visited the plant, the factory manager received word that the top rating had been given to the finishing operation by a prime contractor on a government job, based on cleanliness.

Workmen here are hanging three and a half by two by seven-foot cabinets on the single conveyor line that carries parts to be painted through the entire finishing line. The three-stage spray washer shown in the center features a valve that permits turning off the lower half of the cleaning solution nozzles when smaller parts are run.

Three-stage metal preparation

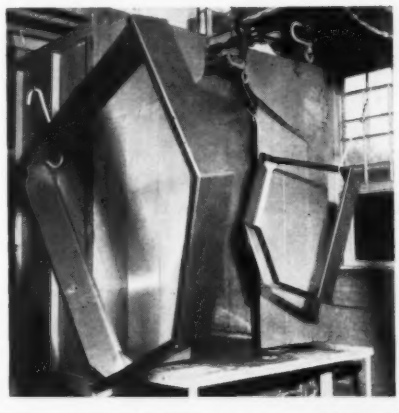
A three-stage, conveyorized metal cleaning and phosphatizing system employs 576 stainless steel spray nozzles and solutions in stainless steel tanks, and a stainless steel immersion heating system which provides a solution temperature rise of 5° a minute. It can process parts such as a cabinet that measures up to five feet by five feet by twelve feet. Parts whose longest dimension is 12 feet are hung horizontally.

The first stage of the metal preparation system consists of a combination cleaner and phosphate coating solution where 192 nozzles direct the solution onto the parts at the rate of 3½ gallons per minute at 20 lbs. pressure.

The flexibility of the unit results from the fact that the lower half of the nozzles can be turned off when small parts are being run. Since there is considerable heat loss in this type of spray cleaning (75 per cent), great savings are realized with this feature. Tank No. 1 is maintained at 150° F. The second tank (rinse) is at room temperature, and the third tank is chromic acid solution. Spray times for the three solutions are: cleaning and phosphatizing 1.4 min., rinse .75 min., and chromic acid rinse .75 min.

Use propane for heating

All the heating requirements for the plant, including finishing, are supplied by propane gas. One advantage of propane as a fuel, according to Maysteel plant men, is that a continuous supply is available at all times, regardless of weather conditions. A 30,000-gallon tank is used for storage of the propane fuel, and is located 1,400 feet away from the plant in accordance with safety requirements.



Another view of the spray washer. ▶ Because of the wide variety of parts run, flexibility in the equipment is important. The entrance to the washer, for instance, can be widened by folding doors to accommodate any size part up to five by five by seven feet.

All of the workmen in the finishing department are equipped with white uniforms to encourage maintenance of the cleanliness requirements. The entire floor on which the finishing facilities are located is constantly "policed' to remove dust and dirt. Furthermore, the location of finishing on the third floor of the factory building is considered an advantage in keeping the area free of dust.

Completely-new facilities

Planning of the finishing line was based on the experience of Maysteel's engineering, production, and finishing department heads and the cooperation of equipment and materials suppliers. The layout of equipment was designed to afford maximum flexibility for running different colors and parts of different sizes and shapes. One conveyor carries the parts from the loading area, just prior to cleaning, to the unloading area, where completely-finished parts are packed and components of assemblies are transferred to assembly conveyors.

◀ A view into the finish coat oven that measures 80 feet in length and provides 160 feet of conveyor travel in the oven itself in a double pass. This oven can be regulated from 200° F. to 425° F.

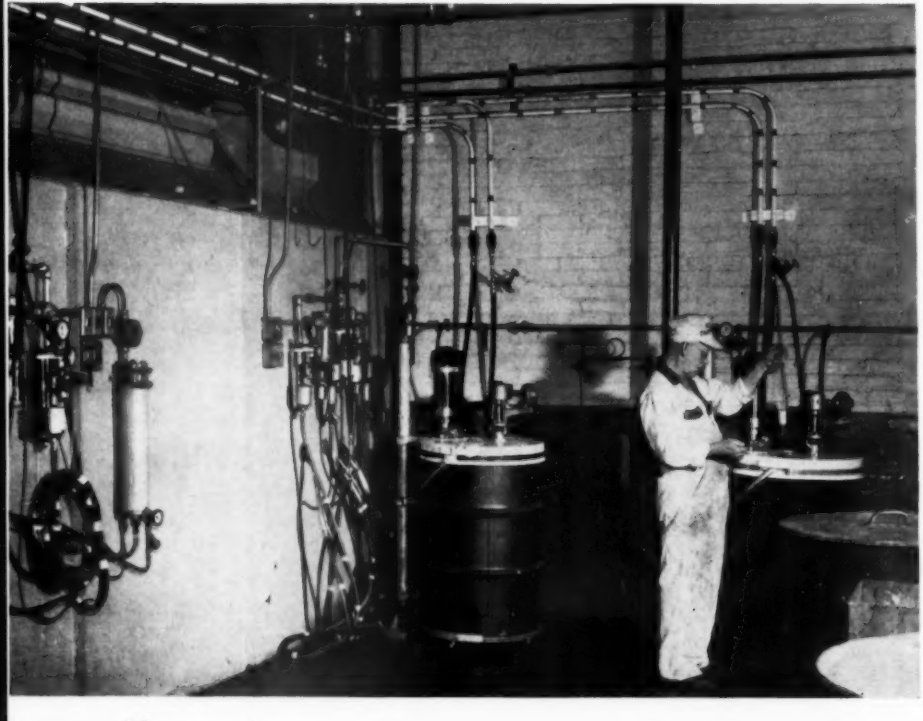
The entrance end of the radiant oven for drying parts that have just emerged from the washer. The radiant refractory burners can be seen just below the cabinet.

EXCLUSIVE MPM PHOTOS

Constant chain speed

A constant chain speed of eight feet per minute has been established for the finishing operation. If necessary for the handling of larger or heavier parts, the work crew is varied to take care of the load. When smaller parts are being finished, any extra operators can be shifted to tasks elsewhere in the department.

After the cleaned and phosphatized parts emerge from the washer, they are sent through a dryer heated by radiant refractory burners. This dryer can be regulated from 300-550° F. Since the chain speed is constant, the temperature is increased when heavier loads are run. The length of the dryer is 48 feet, which corresponds to a six-minute cycle. Ten minutes time is allowed for cooling the parts as they travel from the dryer to the prime coat spray booth.



Air-motor pumps send paint directly from 55-gallon drums to the adjacent spray booth. At the left can be seen the two banks of paint heaters that raise the temperature of the paint to 140° F., thereby lowering viscosity and reducing the need for thinning.

Downdraft water wash spray booths

In the operation at Maysteel are highly-efficient downdraft water wash spray booths. The spray room, conveyor, and downdraft system are so arranged that sprayers can operate from both sides of the parts at the same time.

One interesting feature of the painting booths is the lighting used. A combination of incandescent and fluorescent lamps is used to obtain a blend of characteristics for the best possible lighting. The lighting is so arranged that there is relative freedom from shadows.

Prime coating

A 24-foot prime coat booth accommodates 3 men and provides appropriate space for the finishing of any sized part up to the maximum of five feet by five feet by 12 feet. Inasmuch as different primers are used, depending upon job requirements, the system provides for a quick changeover.

Primers used include enamels, lacquers, and epoxy-type finishes. Both air motor blade-type mixers and paint shakers are used for large or small jobs, respectively. A circulating system supplies primer to the painters using the spray guns.

Baking of the prime coat is accomplished in a 40-foot oven heated by radiant refractory burners. The conveyor makes a loop through the oven, giving a total travel of 80 feet, and equipment can be regulated from 200° F. to 425° F., depending upon the type of finish being processed. There is sufficient conveyor travel between the prime coat oven and finish coat spray booth to provide for normal cooling.

Finish coat application

A high percentage of the production work requires baking enamel in a variety of colors. For this work, a thermosetting acrylic one coat enamel was selected that offers good adherence, good color and gloss retention, and a degree of resistance to moisture and chemicals.

As in the case of the prime coat booth, the finish coat application booth or room is of the downdraft water wash type, and

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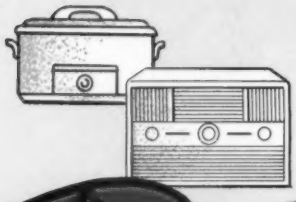

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THERMO-SETTING ACRYLIC ENAMEL

Now . . . tailored to your finishing needs!

Today's biggest news in finishes is the development of amazing DURACRON in a variety of formulations for many end uses.

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● **DURACRON has proved** that *one coat effectively does the work of the conventional two-coat finishing system.* Its many outstanding advantages enhance the sales appeal and utility of the products on which it is used.

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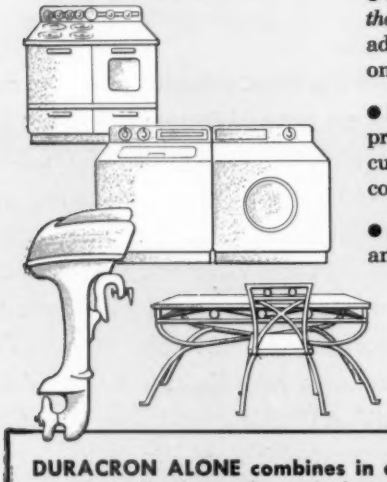

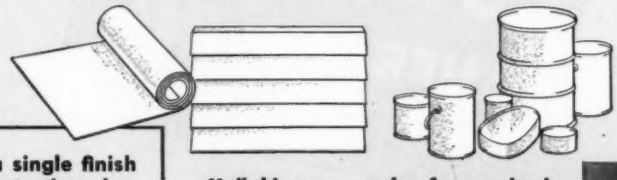

DURACRON ALONE combines in a single finish superior adhesion, color and gloss retention, durability, flexibility and resistance to chemicals, grease, humidity, moisture, salt spray, stains and impact—for a wide variety of end uses.

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A closeup of one of the operators in the finish coat booth applying a thermosetting acrylic enamel to a cabinet.

is of sufficient length to accommodate five spray operators. The hot spray method of application is used for the enamel coating described, with the paint heaters located outside the spray booth. The enamel is heated to 140°F.

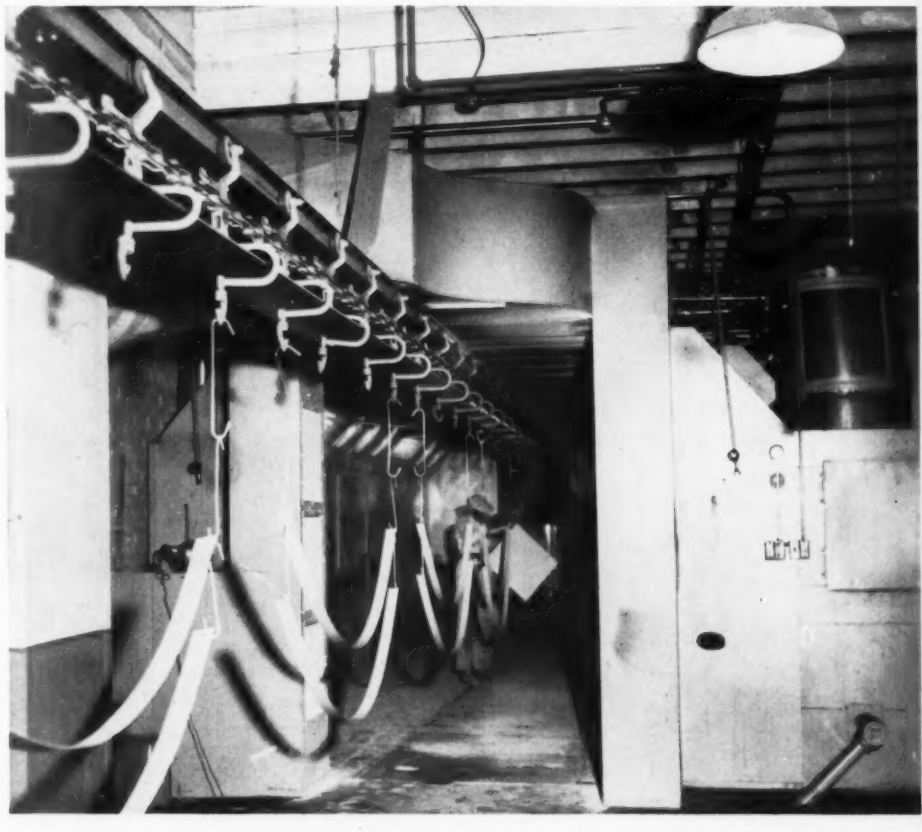
A circulating system supplies a minimum of two colors to the finish coat booth at all times. Air-operated pumps are used to feed the enamel from 55-gallon drums positioned outside the booth.

After the parts are finish coated, they travel through a nine-minute flash-off period before entering the finish oven. The finish oven is heated in the same manner as the preceding ovens, but is considerably longer (80 feet) to provide a 160-foot chain travel and a 20-minute bake. The temperature is variable from 200° F. to 425° F. Baking temperature for the enamel described earlier is 370° F.

Special finishes, too

In addition to the thermosetting acrylic enamel which is run in highest production, the company has occasion to supply products such as heavy transformer-type tanks with a special, hard, heavy-duty finish, and other products and equipment with wrinkle finishes, stipple finishes, and hammertones in many different colors.

Plant supervision men at Maysteel report excellent success with their new finishing plant, which is designed to produce 4,000 lbs. of finished steel per hour at the set conveyor speed of eight feet per mintue. The company reports that production has been more than doubled over the figure established prior to the installation of the new plant. Downtime for color changes has been eliminated, and enamel usage per square foot has been cut as much as 40 per cent. No one factor in the equipment and materials in the new plant is credited with the improvement in production, lowered cost per square foot, and general improvement in quality. It is felt by company executives that this can be attributed to a number of factors: first of all, sound planning in plant layout and equipment selection; second, careful selection of materials to meet the plant requirements; and another important factor, the pride in workmanship which results from the operators working in immaculate facilities and with good equipment.

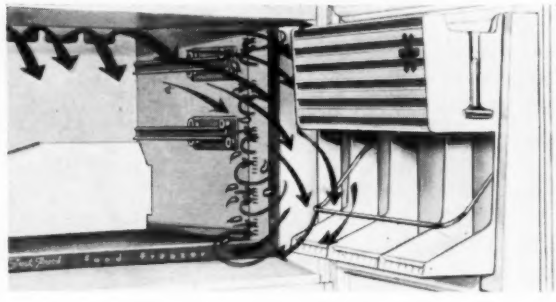


A view of the finish coat spray booth from the exit end. The spray booths employ downdraft water wash systems to permit spraying from both sides of the work. Notice the housing at the right. It is used for water separation of the overspray from the air.

New high capacity dishwashers designed by Frigidaire automatically wash and dry at one time all of the dishes used in an entire day by an average family of four.

A close-up of the Norge Dispensomat automatic washer model AWD-502 shows the Dispensomat compartments and the new fabric washing guide.

Drawing shows how Frigidaire's new Frost-Proof freezer works. Sub-zero cooling coils are located in compartment separated from freezer. Air forced over coils is dried and chilled to below zero temperature before it is drawn into freezer through ports in the top, rear, as shown by large arrows.



Appliances at the summer market in Chicago

The new line of Westinghouse built-in cooking items, ovens and platform units, features automatic rotisseries in the ovens, look-in doors and square-cornered platform units to fit into ceramic tile counter-tops. Pictured above is a 17-inch oven with its gray porcelain interior. Below foreground shows a four-unit platform. The cooking elements in this model plug in and out for easy cleaning. Two-unit platforms, with remote controls, also are available.

Philco's new Citation "Split-Level" meat and pastry oven for 1958 is shown here. The "Split-Level" stainless steel oven was shown experimentally at the NAHB Research Home in Washington, D. C., last summer. The glass oven door shows the full width rotisserie in position. A "look-in" glass panel is on top of the pastry oven drawer. The oven is simply mounted on a 24-inch base cabinet for installation. The "Split-Level" Oven, and other "Citation" custom sectional appliances, are now ready for delivery.

This RCA Whirlpool 36-inch gas range features a new "2-set" timer which turns on and shuts off the automatic oven. The left front burner is thermostatically controlled and the other three Center Simmer burners have infinite settings.

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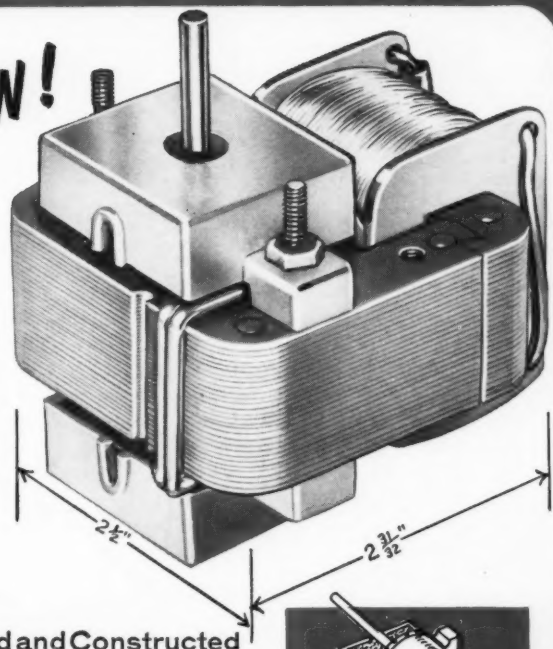

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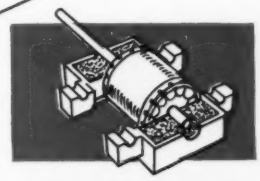
DIE-CAST BEARING BRACKET . . . This new "H" Motor design includes a rugged die-cast bearing bracket that insures permanent precision alignment and adds to the over-all durability.



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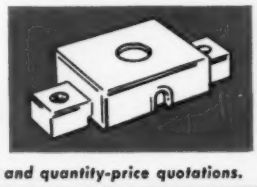
A unique new method of packing the oil wicking assures equal oil distribution at all times resulting in quieter operation and longer, trouble free life.



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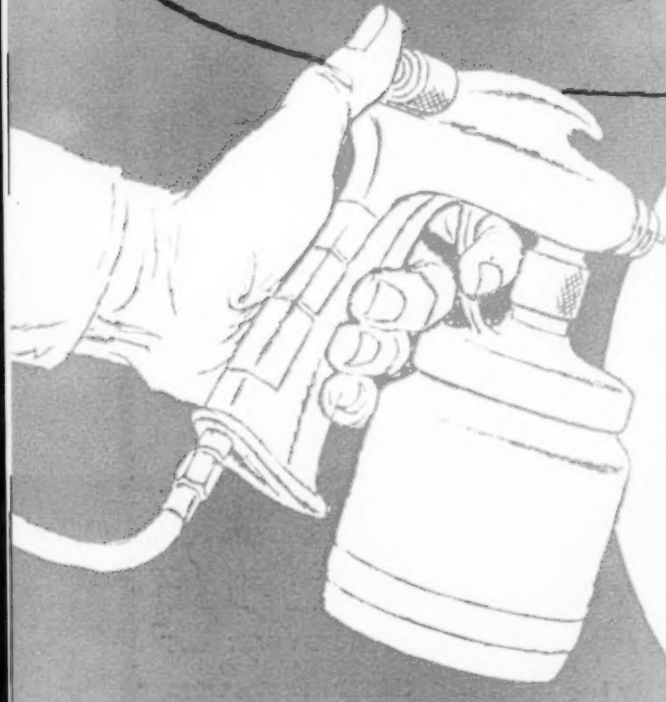
"It has a PORCELAIN ENAMEL Pemco Covercoat"



Pemco Covercoats are formulated for simplified application procedures, and offer you many important benefits along the production line. Color matching characteristics are excellent . . . users find reject percentages are lower. Pemco brings you these advantages and a quality finish . . . always uniform, always beautiful.

The beauty of a Pemco Covercoat—in a clean, sparkling white or a wide range of colors—will not fade with time. Durable, easy-to-clean Porcelain Enamels provide resistance to acid, alkali, heat and abrasion.

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Control considerations for continuous gas fired furnaces

outlining some pitfalls resulting from operating a furnace above rated capacity, and detailing corrective control measures installed

by John D. Thompson • CERAMIC ENGINEER, BRIGGS MFG. CO.

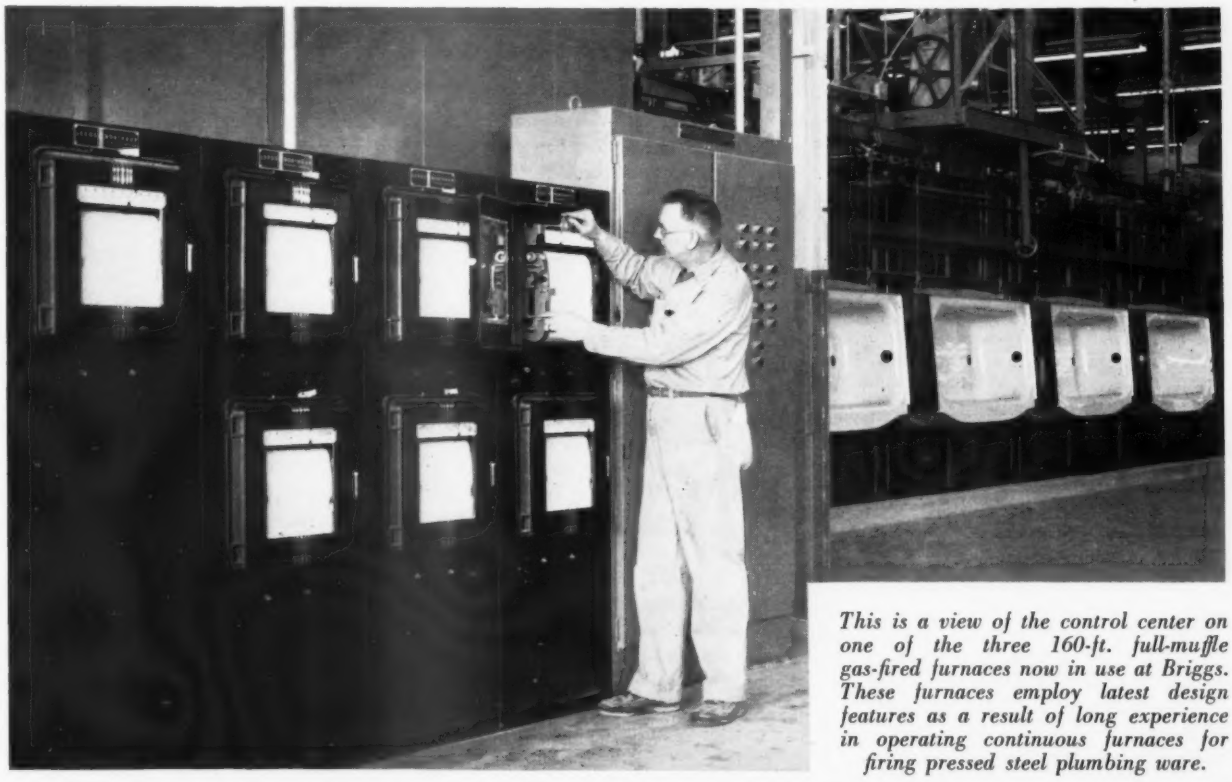
THE PURPOSE of this article is to relate some of the control problems that we have encountered in the firing of formed steel plumbing fixtures with our straight-thru, gas-fired enameling furnaces during the past ten years. Ten years is a relatively-long period of time, and yet when the fact is considered that steel plumbing fixtures were fired largely in box-type furnaces until the end of World War II, then the history of continuous gas-fired furnaces for this type of ware is a relatively short one.

In addition, I would like to point out that heavy gauge shapes such as bathtubs, because of their size and design, pose unusual firing problems because of varying rates of heat transfer throughout the piece. Varying rates of heat transfer lead to tensile failures in the burned ground coat and, in turn, set up the mechanism for hairline cracking in these critical areas. Sanitary-ware also is somewhat sensitive to warpage during the firing operation, and special consideration must be given not only to basic design, but to support during firing and the peak temperature gradients during the firing as well.

Another factor that entered into our early firing problems with continuous furnaces was that of overloading the furnaces in excess of their maximum rated capacities. This apparently came about because the furnaces were built and sized according to estimated production requirements which later proved low by about 15 per cent. Unfortunately, the furnaces were not designed to handle this increase in bathtub production without the penalty of frequent furnace repairs.

Furnace design ever changing

It has been my purpose thus far to point out three conditions which in reality are the basic reasons for furnace control measures that were later inaugurated as the necessity for them became apparent. I think most will agree that the history of furnace design is an ever



This is a view of the control center on one of the three 160-ft. full-muffle gas-fired furnaces now in use at Briggs. These furnaces employ latest design features as a result of long experience in operating continuous furnaces for firing pressed steel plumbing ware.

changing one. Certain inherent weaknesses can be recognized in furnace capabilities today that will be vastly improved upon tomorrow.

Therefore, when we speak of furnace control considerations, we are interested in the mechanics of how best to operate the furnace for maximum operating life under the load requirements imposed and, especially, in the end result of how much quality ware was produced during that period of operation.

Control considerations

Using our finish coat enameling furnace as an example, I would like to point out some of the structural weaknesses that were inadvertently inherent in the original design of this furnace, for our particular type of work. The word inadvertently should be stressed because from the very beginning the furnace was operated well in excess of its rated capacity.

The question here is not one of criticism of the furnace manufacturer but rather how to achieve maximum productivity and furnace life as well under the load requirements imposed.

Details of furnace in question

Before going further, I think it would be well to give a brief description of the particular furnace in question. This furnace had an overall length of 132 feet, with a pre-heat zone of 38 feet, hot zone of 46 feet, and cooling zone of 48 feet. The furnace was heated with natural gas having a Btu content of approximately 1000 Btu/cu ft. Four air-gas motor premixers delivered a mixture of natural gas and air to a total of eight burners. Each premixer supplied two burners. Hot gases from combustion traveled across each firebox, up muffle side walls, downward to flue under floor in pre-heat end of furnace and outward into the stack. Four thermocouples were appropriately located in the crown to indicate temperature throughout the hot zone. Four corresponding controlling potentiometers were used to govern operation of the air-gas premixers.

During a period of ten years, the above furnace was down for repairs exactly seven times. Until 1952 we averaged a repair at least once a year, and on one occasion twice during the same year. Certainly this was a poor record and indeed a costly one. Upon analyzing the basic reasons for these furnace repairs we have a related chain of cause-and-effect events that took place to precipitate each shutdown. We might summerize the analysis as follows:

Analysis of shutdowns

(1) The furnace was operated to produce approximately 15 per cent more bathtubs per hour than it was originally built to produce.

(2) The faster chain speed resulting from the above fact meant that the hot zone was not long enough to properly fire out the cold areas on bathtubs.

(3) To compensate for the underfired condition, excessive fuel input was required.

(4) Excessive fuel input created abnormally-high firebox temperatures, excessive back pressure at the burners, and in the muffle walls and furnace crown.

(5) The above resulted in high volume shrinkage of the refractory arches, thereby causing the floor tile to sag and fall in. It also caused muffle walls to bow outward from improper support. The greatest damage, however, was done to the roof castings which supported the roof refractories. Here, the castings became distorted because of elevated temperature and load, this distortion resulting in closure of the slot through which the drop rods traveled.

The foregoing description of the nature of our furnace failures was generally understood in our company by the end of 1947. It was clear that steps should be initiated to acquire as much physical data as possible regarding combustion conditions of the furnace. During the next year we made provisions for collecting this data to some extent in the following manner:

Collect data on combustion conditions

(1) Installed strip chart recorders on our potentiometers for a comparative study of recorded temperatures on a daily basis.

(2) Installed a temperature recorder to observe flue gas temperature as it entered the base of the stack.

(3) Put a displacement-type gas meter into operation to determine rate of flow.

(4) Installed a three-point temperature recorder for observing temperatures in the pre-heat.

(5) Located (8) sample ports, one for each burner, to check flue gas analysis.

From our observation of furnace behavior and a study of the data collected during the next three years, we established maximum allowable rates of gas input to each air gas premixer. In so doing, the minimum heat input consistent with load requirements per hour was first determined. Secondly, the best combustion conditions, consistent with a proper fuel-air ratio and minimum back pressures, were established. At this point, we were certain that every reasonable measure had been considered from both the standpoint of production requirements and furnace life. In spite of our efforts, we were unable to extend the furnace life little more than one year between repairs. This was due to the previously described failure of the roof castings.

The problem of how to cope with the roof casting failures was then considered. An analysis of these castings showed that they were essentially cast iron. It was believed that longer wear life could be obtained from a nickel chrome alloy casting. During our next furnace repair in March 1952, all of the iron castings were replaced with alloy castings. The cost of this move was justified because our next repair took place four years later. Even then it was not due to refractory or roof casting failure, but rather because the furnace had become quite dirty along the pre-heat and cooling walls, and we did not want to risk a shutdown later on during the year.

Controlling temperature gradients essential

The most important phase of our furnace control problem deals with the subject of temperature gradients, because temperature gradients are the very essence of the firing problem. Much of our work since 1951 has been directed to determine what ware temperature gradients were required for optimum results, and then how to regulate or control the furnace to achieve those results. The second part of this problem is of greater significance, and calls for enumeration of the basic concepts on which our control measures are predicated.

(1) The rate of heat transfer for a new furnace is less than for an older one when operated at the same indicated temperature gradients, load, and fuel input. In the case of a new furnace, it is assumed that normal periods of heatup time and temperatures are followed according to the furnace manufacturers recommendation.

(2) As the rate of heat transfer in the furnace increases with prolonged operation, a corresponding change occurs in ware temperature gradients.

(3) As ware temperature gradients change with prolonged furnace operation, they may increase to promote excessive iron oxide absorption into the ground coat, resulting in related cover coat texture problems.

to Page 68 →

Don't throw away those epoxy-coated rejects

Here's a new paint stripper that will save them

Do you scrap perfect metal parts that have been imperfectly coated with epoxies, vinyls, polyesters and other hard-to-strip paints or lacquers?

In the last few months, users of Oakite Stripper S-A have eliminated many such losses. Here's what some of them say about it:

CALIFORNIA: An aircraft manufacturer tested many strippers on an epoxy designed to resist attack by hydraulic fluid. Finally found that Oakite Stripper S-A is "the only one that safely strips this paint from anodized aluminum."

NEW YORK: A camera maker coats flash bulb reflectors with black vinyl paint outside and aluminum paint inside. "Stripper S-A is the fastest ever used on our rejects."

OHIO: A maker of toy pistols had trouble stripping alternate coats of lacquer and metallized aluminum. Now "Stripper S-A does it amazingly fast and remetallizing is completely satisfactory."

CALIFORNIA: A producer of metal furniture uses Stripper S-A to remove clear epoxy from plated parts. Chemist says "This is the best stripper on the market."

ALABAMA: A hardware maker had trouble stripping lacquer from brass door knobs. Oakite Stripper S-A now does the work in "less than ⅓ the time taken by any other stripper."

NEW YORK: A manufacturer of business machines tested several strippers on various finishes on steel and aluminum. Verdict in favor of Stripper S-A was: "It's doing a wonderful job."

CONNECTICUT: A maker of brass lipstick shells has found that "Stripper S-A quickly strips epoxy lacquers from rejects and heavily coated work spindles."

CALIFORNIA: A missile maker reports that "Stripper S-A is doing a fine job stripping vinyl from stainless steel and titanium."

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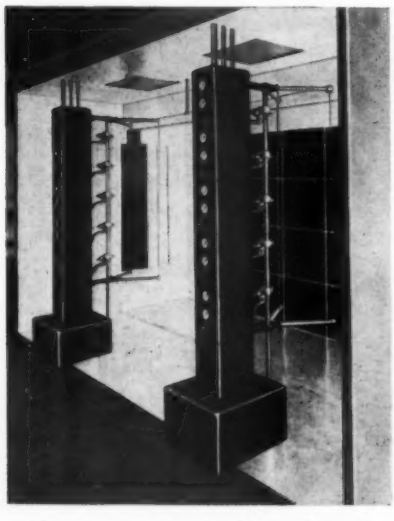
NEW

SUPPLIES & EQUIPMENT

Modular Spray Systems

The introduction of compact, modular electrostatic spray painting systems has been announced.

In the electrostatic spraying system, paint leaves an automatic air atomizing spray gun and receives a negative electrical charge. The metal object being painted is electrically grounded. Because of this positive-negative condition, the product acts as a magnet for the paint. This powerful product-paint attraction assures maximum coverage and utilization.



The system is applicable to the painting of metallic products that can be handled on overhead conveyors or base-mounted conveyorized spindles. In addition to other efficiencies, overspray is greatly reduced, thereby lowering finishing costs. Reduced overspray in turn cuts down on spray booth clean-up time.

For further information, contact Dept. MPM, Binks Mfg. Co., 3122 Carroll Ave., Chicago, Ill.

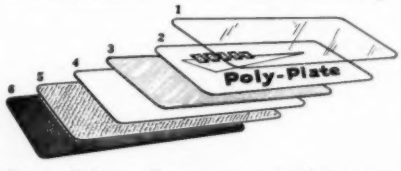
Vinyl-Metal Laminate

Laminol, a vinyl-metal laminate, is now available in aluminum and steel base; sheets to 32″ x 144″, and coils to 32″ wide. A new low-cost utility grade of pre-plated steel, caled C-grade, is also being introduced in plated finishes of chrome, nickel, and copper. Also new is brass-plated steel in two grades: Premium in 24″ widths, and standard in 32″ widths. Both grades carry heavier plating thicknesses than previously, and prices have been greatly reduced.

For further information, contact Dept. MPM, American Nickeloid Co., Peru, Ill.

Self-Bonding Mylar Nameplates

Polyester film self-bonding nameplates can be made to customer specifications as dials, rating plates, instruction plates, or decorative trim. Named "Poly-



Plates," they offer many user advantages over conventional metal nameplate identification, according to the manufacturer. The plate is sub-surface printed, metalized, and sealed to assure permanent legibility of legend, trade mark, pattern design, or decorative trim.

For further information, contact Dept. MPM, W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 9, Wis.

Welding Positioner for Heavy Metals

Development and availability to industry of an ultra-high pressure longitudinal welding positioner for joining metals up to one-half inch thick in any regular configuration from flat sheet to cones, and cylinders up to 54 inches OD, has been announced.

A feature of the equipment, designated Model LW10920, is a special hydro-booster unit that activates two parallel continuous banks of flexible, level-seeking hold down gripping "fingers." The piece part is positioned over a mandrel and both banks of hold down fingers are activated. The fingers move the two edges of the piece part together, then hold them in position under tremendous pressure. The hydro-booster is operated by conventional shop air supplies.

For further information, contact Dept. MPM, Airline Welding and Engineering, 785 N. Prairie Ave., Hawthorne, Calif.

Shop Envelope has Electronically-Sealed Edges

A vinyl plastic shop envelope has electronically-sealed edges that will not fray or tear, it is claimed. The plastic is said to be so tough that a sharp metal part will neither tear nor scratch it. Job tickets or parts cards may be read through the translucent material, which will also accept writing by soft lead pencil or ball point pen.

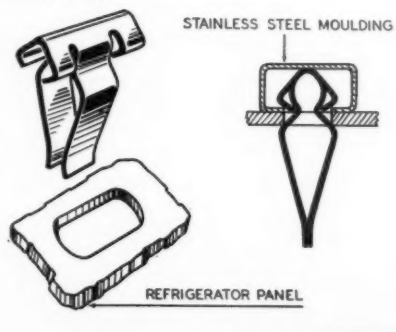
For further information, contact Dept. MPM, Forbes Products Corp., 625 S. Goodman St., Rochester 20, N. Y.

Dart-type Speed Clips

Availability of dart-type "Speed Clips," designed for securing metal moulding strips to refrigerators and other products, has been announced.

Fabricated from quality spring steel, the dart-type fasteners are easily and quickly snapped into panel holes by hand, it is said. Their spring legs will hold them in position ready to receive the moulding strips at any convenient assembly point thereafter. Assembly of the strips is simply a matter of snapping them over the Speed Clips with slight thumb pressure. Four spring fingers on the head of the clip bear firmly on the moulding flanges, preventing rattles due to vibration.

For further information, contact Dept. MPM, Tinnerman Products, Inc., Cleveland, Ohio.



When quality of finish must be the finest—

today's leaders in refrigeration choose

Du Pont DULUX® Enamel

In today's appliance market, the advantages of DULUX are more important than ever before. Finishes foremen like DULUX for its trouble-free performance on the line. Sales likes it for the continued good will it builds with customers.

DULUX is a dependable finish, known for consistency. Colors invariably match specifications. Whites are *really* white. Du Pont's quality control sees to this.

And DULUX keeps its good looks long after the sale. Resists staining from foods, scratching, chipping. It is not injured by household cleansing compounds.

Today more than ever you are right to use DULUX on your line. Whatever your method of application, there's a DULUX appliance finish that's right for your job. Talk it over with your Du Pont Finishes representative—he can help.

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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

"DULUX" ENAMEL

America's leading home-appliance finish

Over 65,000,000 major home-appliance units have been finished with Du Pont DULUX Enamel.

NEW INDUSTRIAL LITERATURE

Perforated Materials Covered in General Catalog No. 75

A new 156-page book on perforated metals and other materials has just been released. It is a handy pocket-sized volume, described as General Catalog No. 75.

The book contains much new technical data, and devotes over 30 pages to illustrating designs in perforated metals and how they are used. Handy captioned margin tabs facilitate finding desired information.

The book is suggested as an informative library piece for engineers, designers, and architects.

Use-illustrations include household appliances, automotive, lighting fixtures, architectural, furniture, household products, and miscellaneous.

For your free copy, write to the Harrington & King Perforating Co., Inc., 5640 Fillmore St., Chicago 44, Ill.

Perforated Metals Versatile Design Tool

Perforated metals have been incorporated into today's products with ideas that have proven themselves. A booklet is available which describes "Perforated Metals for Every Purpose" and is based on ideas gained through 89 years of experience as specialists in the use of perforated metals. For a free copy write Dept. MPM, Charles Mundt & Sons, 55 Fairmount Ave., Jersey City 4, N. J.

How to Clean and Phosphatize in Three Steps

Development of a new material for simultaneously cleaning and light phosphating of iron, steel or zinc in three stages is completely described in a newly available booklet. Applied by either spray or dip, the new material deposits a phosphate coating of up to 70 milligrams per square foot on steel. Detailed technical literature on Turcoat 4185 may be obtained free of charge by writing to Dept. MPM, Turco Products, Inc., 6135 South Central Ave., Los Angeles 1, Cal.

Tempered Glass Dials — Back Panels Described

An informative booklet describing various types of back panels, clock dials, and decorative glass components for ranges, home laundry equipment, vending machines, and radio and television sets is available from the manufacturer. The many uses of tempered glass in appliances is briefly but completely described. The booklet is well-illustrated with many examples of these uses. For the booklet write Dept. MPM, Chicago Dial Company, La Salle St. at 29th, Chicago 16, Ill.

New Fractional H. P. Motor Catalog

A newly revised and enlarged "Smooth Power" fractional H. P. motor catalog is now ready for distribution. It contains illustrations, descriptions, and specifications of eight basic motors, with a total of 36 model variations, ranging from 1/1800 to 1/35 H. P. A new model motor is described in the booklet that is especially designed for applications requiring unusually long service life, according to the manufacturer. It features extra large oil reservoirs, die-cast bearing brackets, and a new method of packing the wicking to insure equal oil distribution at all times under rugged service it is said. Copies of the new catalog can be obtained by writing Dept. MPM, The General Industries Co., Elyria, O.

Expanded Metals

Complete technical information is available on many different types of expanded metals for decorative and utilitarian applications. Each type of expanded metal is described from the standpoint of appearance, weldability, painting, and forming. In addition, the booklet describes how a staff of engineers is available to work with the users to get the best results from expanded metals. For the technical bulletin, write Dept. MPM, United States Gypsum, 300 W. Adams St., Chicago 6, Ill.

Compacted Metals

A booklet is available which completely describes various products that can be made from powdered metals. It is said that costly machining operations can be eliminated with the manufacturing process described in the brochure. By the addition of special additives and the proper control of the process, parts can be produced with a specific consistency or porosity, with special alloying ingredients, non-metallic composition, high temperature resistance, etc., according to the special characteristics desired, according to the manufacturer. For the free brochure, write Dept. MPM, Compacted Metals Corp., 99 Greenwood Ave., Waukegan, Ill.

Basic Book on Zinc

The American Zinc Institute has just published its revised basic text on zinc entitled: "Zinc—a mine to market outline." The 96-page book describes in concise form a wide variety of fundamental data on zinc's history, sources, production, significant properties, and important applications. Die castings, protective coatings on iron and steel, paint additives, and other forms are described in the booklet to show how zinc serves most levels of modern life. For the book, write Dept. MPM, The American Zinc Institute, Inc., 60 E. 42nd St., New York 17, N. Y.

Color, Sound Movie on Fabrication of Stainless

Color, sound movies in 16 mm are available on the fabrication, production and end use of stainless steel. One film covers the electric arc welding of 18-8 stainless steel, showing types of bead, manipulations of the arc and precautions to be observed. Another film describes the deep drawing of stainless steel. For the films, contact Dept. MPM, Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.

Rotary Press Catalog Describes Laminating with Adhesives

A complete bulletin is available which describes presses used to laminate dissimilar plies when bonding with pressure sensitive adhesives. According to the booklet, increased pressure efficiency and faster production are typical of the new type of rotary presses available from the manufacturer offered the booklet. Balanced sandwich-like laminations are said to be easily produced with the new type rotary press available. For the complete booklet, and information on allied products, contact Dept. MPM, Black Brothers Co., Inc., Mendota, Ill.

Standards Chart on Molded Rubber, Neoprene

A chart is being offered by a manufacturer of molded products, cut parts (such as gaskets and washers), rubber covered rolls, parts punched from sheet, extruded parts in natural rubber, neoprene, nitrile rubber, GR-S, thiokol, and butyl. Since tolerances, finishes and inspection are items of cost, the chart will enable the user to specify the most economical characteristics consistent with requirements, avoiding unnecessary operations involving extra expense, it is said. For the free chart, contact Dept. MPM, Williams-Bowman Rubber Co., 1945 South 54th Ave., Cicero 50, Illinois.

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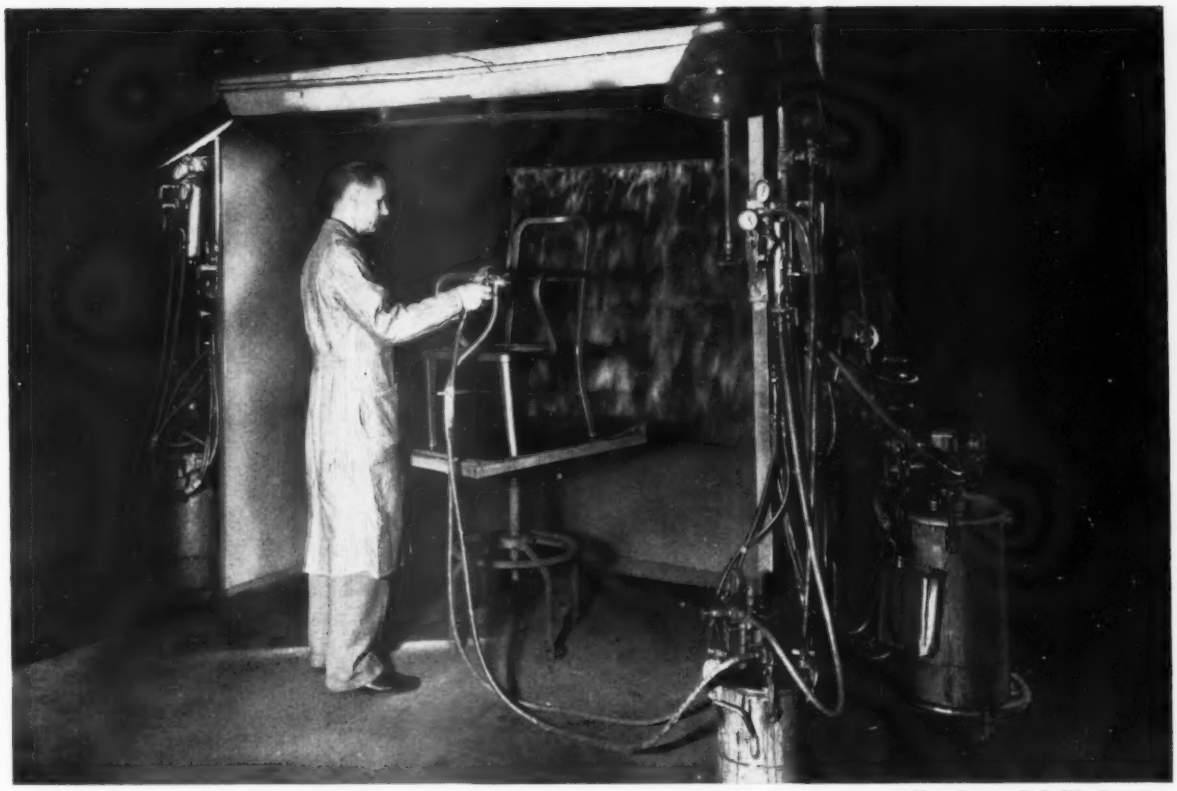

Photo Courtesy Binks Mfg. Co.

SPRAY BOOTH COMPOUNDS BY KERNS

Whether your particular problem requires a wet or dry spray booth compound a Kerns *technical service* representative will be pleased to help you. If you are interested in a wet type compound we suggest you write us regarding K 3986. It is presently being used for both prime and finish coats in the appliance, automotive and other fields. It performs well with a wide variety of finishes.

As manufacturing chemists and producers of *specialized* compounds, we offer our technical services to the appliance and fabricated metal products field. Phone for a personal contact or mail the details of your problem to our Technical Service Department for *quick action.*

PRODUCERS OF: Drawing Compounds—Cutting Compounds—Forging Compounds —Grinding Compounds—Phosphatizing Compounds—Wire Drawing Compounds—Rope and Twine Compounds — Cleaning Compounds — Cling Oils — Rolling Oils — Rust Preventives — Wire Rope Lubricants — Specialized Greases — Spray Booth Compounds.

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New Literature

→ *from Page 58*

Maximum Finishing Oven Efficiency

Six questions are answered in a new booklet which carries the title above. Some of these are: Does the finishing system have capacity for increased production?; Is the equipment simple enough to allow easy maintenance?; What type of materials handling is best suited for a particular process in production? These are just a few of the questions answered in this booklet. For free copy, write METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Solenoid Selector and Free New Bulletin

A complete booklet describing the many applications of solenoids is available, along with a solenoid selector that quickly and easily matches a solenoid to a specific application. Applications include valve actuation, clutch operation, switch function, metering devices, shutter and damper control, and many other operations. For the free bulletin and solenoid selector, contact METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Snap-acting Switch Line

A new 28-page catalog of snap-acting switches gives information on units in general purpose, high sensitivity, environment free, immersion proof, metal cased, and other styles in appliances. Convenient pictorial index tells where to find dimension drawings, descriptions, force and movement specification tables, and electrical ratings for each type of switch. For the free booklet, write Dept. MPM, Unimax Switch Div., The W. L. Maxson Corp., Ives Road, Wallingford, Conn.

Enameling Iron Design Booklet

The complete story of porcelain enamel and how it can offer new opportunity in the design of appliances is available. Everything is included in the booklet from analysis and application to latest methods of fabrication, it is said. For instance, fabrication of enameling iron is covered completely to give the user latest methods known. For the free booklet, write Dept. MPM, Armco Steel Corp., 118 Curtis St., Middletown, Ohio.

Square or Round Mouldings

Many varities of shapes and sizes of stainless steel frames can be roll formed and completely fabricated, ready to attach, according to the manufacturer. Each stainless steel moulding is said to be designed to add a touch of luxury while reducing production costs. For more information, write for "Plan book of metal mouldings," Dept. MPM, Pyramid Mouldings, Inc., 5365 W. Armstrong Ave., Chicago 46, Ill.

Select Perforated Metals for Mock-up Designs

From a general catalog available and a stock list of perforated steel sheets, designers can now project their concepts into an actual mock-up with various types of perforated metal grilles. By referring to the catalog, the designer can select one or more perforated patterns for his project. For the catalog and stock lists, contact Dept. MPM, The Harrington & King Perforating Co., Inc., 5640 Fillmore St., Chicago 44, Ill.

Deep-draw Lubrication

A technical bulletin is available which completely describes an automatic deep-draw lubrication system that processes sheets, strip, plate, blanks, and other forms at speeds up to 100 feet per minute. These automatic systems are said to eliminate chemical waste, provide clean working area and reduce excessive handling. Write for a copy of technical bulletin MP-307, Metal Processing Dept. 629, Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

How to Select Spray Guns

A new catalog, termed "the industry's most comprehensive on spray guns" is now available. Covering manual or automatic spray guns for general or specialized service, the catalog is designed to tell the user how to select the proper gun for the job to be done and the material to be used, and then how to combine it with the proper nozzle to ensure maximum efficiency and economy. All specifications and models for each spray gun are listed. Copies available upon request from Dept. 133, The DeVilbiss Co., Toledo 1, O. Ask for Form I-2000.

Longer Life Rubber Contact Wheels

A free brochure with complete details is available, describing the new urethane rubber contact wheels that are said to give up to 50 times longer wheel life in cutting for grinding and polishing. Designated Cosmo C-57, the new type contact wheel is completely described in this free brochure. The rubber wheels are manufactured in durometers from 60 to 90. For the free brochure, contact Dept. MPM, Chicago Rubber Co., Inc., 651 Market St., Waukegan, Ill.

Deep-drawing Aluminum

A technical bulletin is available that describes how wrought aluminum sheet can be deep-drawn and finished to meet almost all specification standards. For the free technical bulletin that describes how this sheet exceeds most standards, contact Dept. P-5, Fairmont Aluminum Co., Fairmont, W. Va.

Chelating Cleaner for Platers

Chelating cleaners convert metallic salts and oxides into compounds that are soluble in water and, the process also removes oil to combine pickling and alkaline cleaning into one operation. It avoids such disadvantages as hydrogen embrittlement and etching of machined surfaces. For the free-14-page illustrated booklet called "Here's the best shortcut in the field of electroplating," write to Oakite Products, Inc., 32H Rector St., New York 6. N. Y.

Precision Snap Switches

Two new bulletins on two types of snap switches are offered. Bulletin 263-B is for class 1 TyniSwitch which are top mounted and top actuated, with a wide choice of terminals and actuators. Bulletin 270 is for class 4 TyniSwitch which is side mounted and top actuated, with a choice of actuators and terminals. It is stated that these TyniSwitches are smaller in size than other snap switches of equal rating, yet they provide the maximum degree of operating efficiency. They are also said to be virtually bounceless, and to be exceptionally resistant to shock and vibration. Write Dept. MPM, Detroit Controls Div., American-Standard, P. O. Box 741, Bridgeport 1, Conn.

New Palletainer Catalog

A new 18-page catalog on USP Palletainers, for all types of materials handling, is now available. This comprehensive catalog contains a broad variety of in-use photographs of the various Palletainer, steel mesh container models. Consolidated specifications, capacities, base plans and side or end gate details for the broad range of models are shown in a new easy-to-read form. For your free copy write Dept. MPM, Union Steel Products Co., Materials Handling Equip. Div., Albion, Michigan.

Extra-Short Horizontal Indicator Light Assembly

A new data sheet spotlights this company's type No. 50 indicator light assembly as the shortest such assembly available for use with the standard miniature bayonet T31/4 lamp. The unit is illustrated with complete dimensional detail, and available variations in types of lampholders and lenses are listed. Write Dept. MPM, Drake Mfg. Co., 1711 W. Hubbard St., Chicago 22, Illinois.

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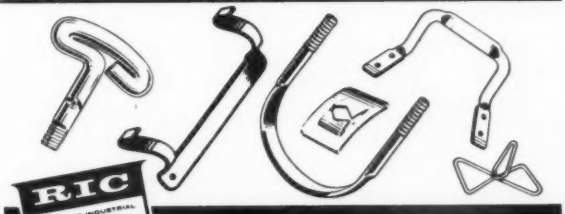

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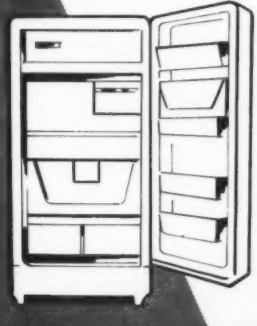

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IS FAMOUS FOR
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NATIONAL LOCK

for all your appliance hardware and fastener requirements

RANGE HARDWARE • HANDLES
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Simplified purchasing and inventory control... dependable delivery ... all are a part of the service when you order your quality hardware ALL FROM 1 SOURCE ... from NATIONAL LOCK COMPANY. National Lock standard and custom-built products are quality controlled and competitively priced. • Send us your "specs", you'll readily see how our extensive engineering facilities can save time and money right down your production line.

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In every way, your local steel distributor is geared to keeping production lines rolling.

He's ready to rush the amount, quality, size and shape of steel to meet almost any conceivable demand—on the double. He's your on-the-spot insurance against the plant shutdowns and lost contracts that can be caused by in-plant steel shortages.

On a regular basis, his facilities, stocks and fast delivery service can be integrated with your production needs. He is, truly, the service center of the steel industry. And he's only a phone call away.

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WEIRTON STEEL COMPANY

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a division of

NATIONAL STEEL CORPORATION

Elect Officers for NEMA's Air Conditioning Section

J. B. Ogden, general manager of the Air Conditioning division of Whirlpool Corp., was recently elected chairman of the new Room Air Conditioning section of the National Electrical Manufacturers' Association after having served as temporary chairman since the section's organization meeting recently.

Paul Augenstein, general manager, Room Air Conditioning department, Major Appliance division, General Electric Co., was elected vice chairman.

The section, through its General Engineering committee, will begin work immediately on the development of product standards, as well as on standards of tests for room air conditioners. The committee will also consider problems involved in certification or similar programs.

Porcelain Enamel Curtain Wall Buildings up in 1957

Porcelain enamel curtain wall buildings constructed in the United States during 1957 totaled 791, according to a listing recently compiled by the Porcelain Enamel Institute. The list, which is divided geographically by states, includes the name of the building, type, location, and number of square feet of porcelain enamel.

Last year, PEI published a similar list containing 724 curtain wall buildings, which covered the period through December 31, 1956.

Bettinger 1957 Net Income Up Over '56

The Bettinger Corp., Waltham, Mass., announced recently that its net income for wholly-owned operations in 1957 rose slightly over 1956 despite a small decrease in sales. Gross income for 1957 was $2,822,589, compared with $2,894,657 in 1956. This resulted in a net income of $90,069 for 1957 as against $87,082 for 1956.

Waste King Declares Dividends

Directors of Waste King Corp., Los Angeles, have declared a 2-per cent stock dividend on the common stock, and a 15-cent dividend on the preferred stock, it has been announced. Both dividends are payable July 15 to shareholders of record June 30.

IAM Suggests Six Standard Colors

Activities of the color committee of the Institute of Appliance Manufacturers, as reported in earlier issues of MPM, have been under the guidance of Carl R. Smedley, director, color research, The Glidden Co., and John McCord, Ferro Corp., representing organic finishes and ceramic finishes, respectively.

In the Glidden booth at the IAM meetin Cincinnati, six standard colors were displayed on full size refrigerator doors. The colors displayed consisted of gray-neutral, light turquoise, blue, pink, green, and yellow-neutral.

Much favorable comment was heard concerning the suitability of the colors suggested, and IAM headquarters reports solid interest and demand for available samples of the six suggested colors.

The committee has added to its service by suggesting complete color schemes for the six standards, including colors for ceiling, walls and woodwork, counter tops, curtains, and floor covering.

For additional information in regard to suggested standards for appliance colors, write on your letterhead to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Nickel Shoe Shines and Hot Dogs Highlight Westinghouse Drive

Nickel shoe shines and hot dogs in some 5,000 Westinghouse appliance stores during the next few weeks will highlight a campaign to spur economic recovery by showing that appliance prices and values are better today than ten, and even 20, years ago. Called "Opportunity Days," the campaign will have national advertising support on television and through key city newspapers. Selling items like hot dogs and shoe shines for a nickel once again is designed to demonstrate dramatically that, while other prices have risen, Westinghouse appliance prices are actually lower.

Maytag Increases Employment Through "Operation 72"

Maytag's employment has been increased by approximately 275 persons as a result of the appliance firm's successful "Operation 72" sales marathon held recently, E. F. Scoutten, vice president, announced.

Over $17,000,000 worth of appliances were sold during the three-day campaign.

Due to an increased number of orders, the company has increased its production rate of automatic washers, bringing about an increase in employment.

During "Operation 72," an average of one appliance every four seconds was sold to dealers when Maytag executives, led by President Fred Maytag II, manned telephones continuously for 72 hours, receiving orders called in by fieldmen.

Using telephones at the first table, from left, are: President Fred Maytag; George Umbreit, executive vice president; Claire Ely, marketing vice president; Gerald Ankeny, general sales manager; and George Owen, sales promotion manager. As orders came in from dealers, they were posted on large wall charts around the room.

Dealer Launches "Trade-A-Rama"

Miller Auto Supplies, Inc., Harrisburg, Pa., newly-franchised Kelvinator dealership, has kicked off its first full-scale promotion with a 60-day "Trade-A-Rama."

The "Miller Trade-A-Rama," keyed to the theme of Kelvinator's national "Lucky Star" promotion, will be promoted at the dealer's two stores in Harrisburg, and at neighboring towns of Lebanon, Carlisle and Sunbury.

The kick-off meeting was held at Har-

risburg's Blue Ridge Country Club for Miller's entire sales and service organization. Participating in the meeting were factory sales executives from Detroit and personnel from The Careva Corp., Kelvinator distributor at York.

National Metal Exposition and Congress Scheduled

Dates of Oct. 27 through 31 have been set for the 1958 National Metal Exposition and Congress, in Cleveland Public Auditorium, Cleveland, Ohio, the sponsoring American Society for Metals announced at its headquarters.

W. H. Eisenman, late managing director for the "Metal Show" and former national secretary of the 30,000-member metals engineering society, had said it would be the 40th annual version of this largest of industrial expositions and concurrent scientific gatherings.

It will be the Metal Show's 11th return to spacious Cleveland Public Auditorium and its 250,000 square feet of exhibit space.

William Eisenman Dies

Nationally and internationally known among members of the metallurgical profession and in the metalworking industry, William Hunt Eisenman, 73, secretary and a founder-member of the American Society for Metals, died Friday, May 30 in a LaJolla, California hospital.

New Officers for NEMA Room Air Conditioning Section

The newly elected officers of NEMA's *Room Air Conditioner Section are, from left to right J. B. Ogden, General Manager of the Air Conditioning Div., Whirlpool Corp., Chairman; and Paul Augenstein, General Manager, Room Air Conditioner Dept., Major Appliance Div., General Electric Co., Vice Chairman.*

NAAMM Elects Officers

CRAWFORD

McKENZIE

Newly elected as President of the National Association of Architectural Metal Manufacturers was Paul C. Crawford, vice president, Wooster Products, Inc., at the Association's 20th Annual Convention recently held at Houston, Texas. Ralph L. McKenzie, Designer, The Flour City Ornamental Iron Co., Minneapolis, Minn. was elected to serve as President of the Metal Curtain Wall Division of NAAMM.

More Intensive Selling Brings Workers Back on Job

The sales division of Lyon Metal Products, Aurora, Ill., decided they were going to sell enough volume to return laid-off workers to their jobs. As a first step, J. M. Olesen, vice president, called all Lyon district sales managers to Aurora. Every manager was given a job to do; sell more Lyon Products and get all "lay-offs" back on the payroll.

Managers were asked to have every salesman make an extra call per day. The salesmen were given new products, new advertising, and sales promotion and sales programs to help them sell more products. Lyon's regional sales managers went into the field and helped get the story over to every salesman; "Let's tell more and sell more and get all people back on the payroll."

Proof that the salesmen accepted the challenge is the fact that 145 of 222 workers have been called back to work and are now on the job.

Borg-Warner Enters New Home

The central office of Borg-Warner Corp., Chicago, was recently moved to the new Borg-Warner Building at 200 S. Michigan Ave., the southwest corner of the intersection of Michigan Ave. and Adams St. Chicago's newest skyscraper was named after Borg-Warner because the corporation is the building's principal tenant. The company, however, has no financial interest in the structure.

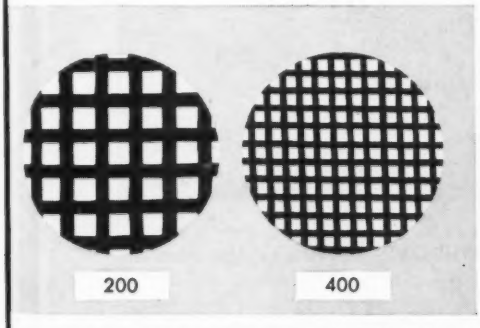
Borg-Warner is one of the country's most diversified companies, manufacturing some 200 widely different products, including automotive, farm machinery, and aircraft parts; Norge household appliances, York air conditioning units and systems, home equipment such as bathroom and other plumbing fixtures, furnaces, and insulation, specialty steels, industrial equipment, electronic equipment, and defense products.

Maytag Employes Receive Cost-of-Living Allowance

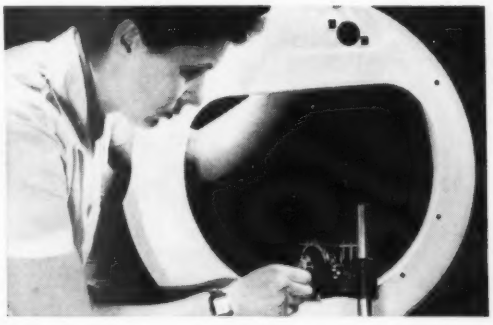
Employes of the Maytag company have received an 8-cent an hour cost of living allowance, effective June 13, according to E. F. Scoutten, vice-president, personnel. At present, a 6-cent an hour allowance is paid to all employes.

A "beachcombers" fishing party from Boca Raton during the AHLMA *spring meeting.*

Newest development in automatic, high production of porcelain enameling, *electrostatic spraying* of the finish, is under intensive study at FERRO. Shown above is the full-size production "lab" where electrically charged particles of "slip" are sprayed on conveyorized ware . . . continuously, uniformly, and with little or no overspray.



Finer grinding of the mill formula is a "must" (to 400-mesh fineness instead of usual 200-mesh size). Special frits and mill additives are tested to improve production and quality of the finish.



Finished ware is carefully checked for thickness and uniformity of coating; other tests with precision instruments check for color, reflectance and resistance to abrasion and acids.

Influence of *temperature* and *humidity* in the spray chamber is checked under automatically controlled conditions. Both are accurately recorded, to assure that what we do *here* will *work for you.*

ELECTROSTATIC SPRAYING . . . *will it cut costs for you?*

FERRO®

This new spraying process could revolutionize porcelain enameling, particularly in highly mechanized, big-volume production operations. Potential benefits include lower material and labor costs, greater uniformity in application, higher predictable production.

Like most developments in this field, considerable work is needed after the "discovery" to make the process practical for general use by the industry. Ferro is now engaged in such work. Complete production and testing facilities have been installed. A team of competent technicians have been assigned to the job, and Ferro's complete Research-Development staff of 35 skilled specialists are contributing as needed.

Ferro didn't discover this new spraying process, but we're going to do everything we can to make it practical and *profitable for YOU.*

FERRO CORPORATION 4150 EAST 56TH ST. • CLEVELAND 5, OHIO

INDUSTRY PERSONALS

W. R. Tappan, executive vice president and general manager of the Tappan Co., Mansfield, Ohio, has been elected president of the firm to succeed **Alan P. Tappan,** who has been elected chairman of the board of directors, it was announced following the regular quarterly meeting of the board. The former will also continue his duties as general manager.

The new president became associated with the Tappan Co. in 1939 as a sales representative. Since that time, he served as an assistant sales manager, manager of war product sales, and manager of the war products division in Marion, Ohio. He was elected vice president of the company in 1945, and named vice president and general manager of the firm in 1952.

Alan Tappan started his career with the Tappan Co. in 1919 as a sales representative. In 1923, he was named plant superintendent, was elected vice president in charge of sales in 1931, and president of the company in 1945. A veteran of both World Wars, he currently holds the rank of colonel in the Air Force Reserves.

Appointment of **Frank J. Gallagher** as superintendent of one of three Waste King Technical Products Division facilities in Los Angeles has been announced.

The appointment of **Robert J. Fairhead** as Eastern regional sales manager for Bryant Mfg. Co., a division of Carrier Corp., has been announced by David W. Hoppock, vice president and general sales manager.

The appointment of **Nathaniel Cannistraro** as vice president of sales and marketing for the Bettinger Corp., Waltham, Mass., has been announced by Robert A. Weaver, Jr., president.

Rheem Mfg. Co. recently announced appointment of **M. H. Temple** as vice president and general manager for its Richmond Plumbing Fixtures division. Temple, who has been vice president and assistant general manager in the division, succeeds **John J. Hall,** who is relinquishing his post as Richmond president to devote full time to his duties as a Rheem corporate vice president and member of its executive committee and board of directors.

Robert W. Armstrong has been appointed manager of public relations, RCA Whirlpool appliances, a new position, Jack D. Sparks, director of marketing for the company, has announced.

Hubert Junge has been appointed Michigan district manager for Chambers Built-Ins, Inc., Chicago, it has been announced by A. H. Scheffer, sales manager.

Hal S. Ray, a ten-year veteran in the appliance field, has been named a factory district manager for Chambers Built-Ins, Inc., Chicago, according to Arthur H. Scheffer, national sales manager.

Charles H. Kellstadt was elected company president at a meeting of the board of directors of Sears, Roebuck and Co., held recently. He has been vice president in charge of the company's southern territory since 1950.

Arthur K. Walton, who has been supervisor of Sears' automotive tire buying division, succeeds Robert E. Brooker as vice president in charge of factories. Brooker has resigned from Sears to become president of Whirlpool, but will continue as a Sears company director.

W. R. TAPPAN

A. P. TAPPAN

CANNISTRARO

TEMPLE

RAY

WALTON

Hotpoint Co., a division of General Electric, announced recently the retirement of **John C. Sharp,** president and general manager, effective May 31, 1958. Sharp has been president and general manager since May, 1952, and associated with Hotpoint Co. and its predecessors since July, 1929. He will continue for the next several months as a consultant.

Charles LeB. Homer, president of Stran-Steel Corp., a unit of National Steel Corp., has announced the appointment of **Hillery G. Knecht** to the position of vice president in charge of manufacturing and engineering. Stran-Steel Corp. manufactures a complete line of pre-engineered steel buildings, including the new low-cost do-it-yourself Stran-Master and a complete line of steel architectural products.

Appointment of **William C. Wichman** as general manager of the Hotpoint Co. has been announced by James H. Goss, vice president and group executive for the General Electric consumer products group. The appointment became effective June 1.

Wichman, a General Electric vice president, succeeds John C. Sharp, president and general manager of Hotpoint since 1952. Before his appointment as chief executive officer of the firm, Wichman was general manager of the General Electric Supply Co., Bridgeport, Conn.

Appointment of **Ralph Bowden** as Western District sales manager of the Lyon Stainless Products Div. of Lyon, Inc. has been announced by Ernest H. G. Maron, divisional sales manager.

William S. Ramseaur has been appointed Southeast regional sales manager for Bryant Mfg. Co., it has been announced by David W. Hoppock, vice president and general sales manager.

Harold Tiley, formerly general sales manager, has been appointed to the newly-created post of customer relations manager for Caloric Appliance Corp., according to LeRoy Klein, vice president in charge of sales. Concurrently, **Harry J. Levin,** formerly assistant general sales manager, has been named sales coordinator to handle customer liaison and free Tiley of administrative detail. In addition, **James A. Kerr** has been appointed public relations manager for the firm. He was formerly public relations director for Federal Pacific Electric Co.

when the time comes...

for new and better glass products — whether it be today or 2000 A.D. — Marsco's craftsmen engineering team will develop them.

The Junior Spaceman above has the best in interplanetary protection — a glass space helmet — because glass can be bowed to fit any desired shape and yet it can be tempered to impart extreme resistance to impact.

You or your family don't need space helmets today but chances are glass could improve the utility and beauty of your product and make it more salable today.

Let Marsco's craftsmen engineering team impart to your product all the advantages of glass.

ask for the man from

Marsco

Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:

- CLOCK & TIMER CRYSTALS
- OVEN DOORS
- RADAR EQUIPMENT
- AIRCRAFT ACCESSORIES
- PHOTOGRAPHIC EQUIPMENT
- LIGHT LENSES
- DIALS & NAME PLATES
- TELEVISION EQUIPMENT
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Special shapes for: Instruments, Gauges, Household and Industrial Appliances.

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is your guarantee of highest quality
BURNING TOOLS
25 years of service to the Porcelain Enameling Industry
•
the fahralloy co.
150TH AND LEXINGTON AVENUE • HARVEY ILLINOIS
A Member of the Alloy Casting Institute

Editor's Mail

→ *from Page 6*

never attended one of these appliance conferences before. . .

D. C. Krammes, Chairman
Subcommittee on Domestic Appliances
American Institute of Electrical Engineers

Ed. Note: The magazines in the appliance field assisted in pre-meeting publicity by devoting space in each of three issues to the conference preceding the meeting.

Wants reprints

Gentlemen: The article "New Plant Features Modern Fabrication and Porcelain Enameling Facilities" in your June issue presents several items of interest.

We will appreciate your forwarding three reprints, if possible, for our staff members.

H. H. Stanley, Senior Process Engineer
Hotpoint Co., Milwaukee, Wis.

Liked packaging article

Gentlemen: Thank you for your letter of April 1, 1958, and the extra copies of METAL PRODUCTS MANUFACTURING.

The writer has received favorable comments on the manner in which you presented the article. Top management personnel at Whirlpool, as well as some of our vendors, have sent congratulatory remarks.

Joseph W. Mueller, Packaging Engineer
Whirlpool Corp., St. Joseph, Mich.

Sorry, our error

In the May, 1958 issue of METAL PRODUCTS MANUFACTURING, Page V-21, the vending machine shown at the top of the page was incorrectly captioned as a unit made by the United Sound and Signal Co., Inc. Photos below correctly identify the machine at right to be the product of Lyon Industries, Inc. Vendor at left is of United Sound and Signal manufacture.

Another reader of MPM

Gentlemen: Please place the writer on your mailing list of the monthly trade publication, including finish.

We would appreciate having you furnish tear sheets on the feature "New Plant Features Modern Fabrication and Porcelain Enameling Facilities," which appeared in your June, 1958 issue of METAL PRODUCTS MANUFACTURING.

A. J. Pellegrini, Vice President
Pennsylvania Range Boiler Co.
Philadelphia, Pa.

Control considerations

→ *from Page 54*

(4) To control the ware temperature gradients, it is necessary to run occasional checks and make the required adjustments in fuel input if ware gradients show a temperature rise.

To illustrate this point, we found that we could successfully operate our finish coat furnace with 7.5 per cent less gas after three years continuous operation as compared to the total operating gas consumed immediately after the furnace was repaired. This reduction resulted in an improved cover coat texture.

(5) The most important single factor in firing to minimize severe hairline definition was to raise peak ware temperature in critical hairline area by 35 degrees Fahrenheit.

(6) Indicated furnace temperatures, being only relative, are often misleading. They become of value when some degree of correlation has been established with ware temperature gradients. Even then the degree of correlation must be checked at regular intervals because of the ever-changing rate of heat transfer in the furnace.

Adapted for Metal Products Manufacturing from a paper presented at the 19th Annual Shop Practice Forum of the Porcelain Enamel Institute, Ohio State University, November, 1957.

HUYCK *FURNISHES FIREBRICK MASONRY TO BUILD, REBUILD AND REPAIR ALL TYPES OF: ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.*

HUYCK *LINES AND RELINES MILLS*

HUYCK *MASONRY IS GUARANTEED TO GIVE YOU BETTER PERFORMANCE AND LONGER LIFE*

Huyck CONSTRUCTION COMPANY..

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Here's the Norge Automatic icemaker

(Continued from Page 21)

overfilling of the ice drawer with ice cubes, when only a few cubes are removed. It also prevents discharge of the cubes into the space provided for the ice drawer when drawer is removed.

NOTE: When re-installing the ice drawer it must be pushed in all the way so that the automatic shut-off mechanism is made inoperative.

B. MAIN COMPONENTS OF THE ICE CUBE MAKER

1. "ON" and "OFF" Knob.

The "ON" and "OFF" knob on the front cover of the ice cube maker is attached to a rod that has a hook arrangement on the opposite end (located in the switch housing) which forces down on the bracket of the full load shut-off mechanism, when the knob is turned to the "OFF" position. If there is an ice load in the tray pan it will be placed in the top ice drawer and the mechanism will shut-off. The "ON" and "OFF" lever duplicates the same action as the full load shut-off mechanism.

2. Full Load Shut-off Mechanism.

When the top ice drawer is full of ice cubes the weight of the ice cubes (approximately 4½ lbs.) operates a lever mechanism that is hinged near the front of the ice drawer. This mechanism is also the support glide assembly for the top ice drawer and is hooked over a floating bracket assembly, located below the switch housing.

This bracket or hook is attached to a rod which is designed so that it can move the master motor switch mounting bracket away from the cam through a special floating lever incorporating a finger on one end and a pivot on the other end.

The weight of the ice cubes in the ice drawer pulls the rod assembly downward, since the rod assembly is hooked to the motor switch mounting bracket by the floating lever incorporating a finger, this finger is pulled down into the path of the cam as it rotates. As the cam rotates a high spot on the cam contacts the finger on the lever and it in turn pushes the motor switch and bracket assembly backward.

This action prevents the motor switch lever from contacting the cam and the circuit to the motor is opened. Since the grids are directly coupled to the motor drive shaft and cam, they stop rotation at the half way point, or in the "UP" position. This is the high point on the cam assembly face.

When sufficient ice cubes are removed from the ice drawer (approximately one tray load) the shut-off rod will raise upward pulling the floating lever upward away from the cam. The motor switch then travels forward and the switch lever contacts the cam surface operating the switch and in turn energizes the motor.

3. Safety Shut-off Mechanism.

The safety shut-off mechanism operates when the ice drawer is removed. As the drawer is removed from the glide assembly, the contact lever of the shut-off mechanism swings forward under spring tension and by a rod arrangement — moves the entire motor switch bracket away from the cam assembly. If the motor switch cannot contact the cam and close the circuit to the motor the grids cannot rotate and dump cubes when the drawer is removed.

4. Feeler Arm.

The feeler arm is attached to the full load shut-off mechanism just above the hook under the switch housing. The feeler arm fulcrum is on the front edge of the switch housing.

The feeler arm is used as an additional safety shut-off when the ice drawer is pulled outward and not completely removed from the support assembly. The back wall of the ice drawer forces the curved portion of the feeler arm upward, thereby applying pressure downward on the hook of the shut-off mechanism. Feeler arm also keeps mechanism shut off when drawer is full of cubes.

NEWS

Controls Company Buys Redmond

Controls Co. of America, Schiller Park, Ill., has announced the acquisition of Redmond Co., Inc., Owosso, Mich., and Redmond Motors, Ltd., St. Thomas, Ontario, Can., through purchase of their inventories, tooling, patents, and trademarks for approximately $1,715,000, and the leasing of plants, equipment, and other fixed assets.

Louis Putze, Controls Co. president, said rental of Redmond's five U. S. plants and their equipment would be $220,000 annually for ten years, with an option to buy these assets for $500,000 at the end of the lease period. The Canadian plant will be leased for one year, he said.

The Redmond companies manufacture electric motors and small special types of electrical rotating equipment. In its 30 years, Redmond has produced more than 70,000,000 motors. Controls Co. is a major manufacturer of controls for the aircraft, guided missile, computer, electronic, air conditioning, automotive, refrigeration, heating, and appliance industries.

"The acquisition brings us an integrated manufacturing business with a well-established line of electric motors, a new group of customers not previously served by us in the ventilating field, an increase in electro-magnetic engineering, manufacturing facilities, and knowledge, an expansion of both customer and product volume in Canada, and an overall increased profit potential," Putze said. Redmond management, headed by James Tweedy, president, will continue to operate the company, he said. Tweedy will become a vice president of Controls Co.

New Armco Hot Strip Mill Now in Production

Reportedly the world's most powerful 56-inch hot strip mill started operations recently at Armco Steel Corporation's Butler Works. The new $26,000,000 mill will enable the Butler plant to hot roll wider sheets of Armco's precipitation-hardening grades of stainless steel, now widely used in aircraft and missile construction. Electrical steels also will be produced by the mill which has 33,000 connected horsepower packed in its seven electric motors.

Standard Enameling Renamed Wedgewood-Holly Corp.

Standard Enameling Co., Culver City, Calif., a wholly-owned subsidiary of Rheem Mfg. Co., Chicago, has changed its name to Wedgewood-Holly Corp. The subsidiary makes gas ranges.

Two New Departments to be Established by Bettinger Corp.

Two new departments, geared to mass production, will be established by the Bettinger Corp., Waltham, Mass., designers and processers of ceramic-on-steel products, in conjunction with their move into a new plant. The new departments, Production Whiteware and Production Sign, are additions to Bettinger's organization structure.

NEWS about Suppliers

Reynolds Metals Reports Good First-Quarter Earnings

Reynolds Metals Co. reported good first-quarter earnings for 1958, but profits are not expected to remain at this level during the remainder of the year, Richard S. Reynolds, Jr., president, told stockholders at the company's annual meeting recently.

Consolidated net profit for the first quarter of 1958 amounted to $9,910,345, or 86 cents a share, Reynolds said. This compares with a net of $9,8880,571, or 86 cents a share in the same quarter of 1957, and $10,105,107, or 88 cents a share in the last quarter of 1957.

Corporation to Enter Market with Aluminum Coated Steel

Plans to enter the aluminum coated steel sheet market were announced recently by Richard F. Sentner, U. S. Steel Corporation's executive vice president-commercial.

Commercial production of USS aluminum coated sheets will follow a facility modification program at U. S. Steel's Irvin Works near Dravosburg, Pa. Engineering plans call for alteration of the 48-inch, light gage continuous hot dip galvanizing line at Irvin Works to also produce aluminum coated steel sheets.

The modified coating line will produce aluminum coated steel sheets 18 gage and lighter. Principal applications of the new product are expected to be in the automotive, aircraft, farm and home appliance fields, USS reports.

Typical uses of aluminum coated steel sheets in home appliance manufacture include kitchen range components, laundry units, space heater reflectors and parts, furnace parts and broilers.

In the automotive field, the sheets are recommended for mufflers and tail pipes, and the sheet has been used for airplane fire-walls. Corrosion resistance and heat reflectivity lead to their recommendation for roofing and siding.

Six Westinghouse Men Divide $9,000 Patent Award

For inventions leading to the development of West-ing-arc welding systems, Westinghouse Electric Corp. has presented $9,000 in patent awards to six engineers and research scientists.

At a special ceremony, W. W. Sproul, Jr., vice president in charge of general products, presented awards. Sharing equally in recognition were Harry J. Bichsel, George H. Cotter, and Joseph F. Miller, of the Westinghouse welding department, Buffalo, N. Y.; Alfred Baeslack of the systems control department, Buffalo; and Howard Ludwig and Julius Heuschkel, of the company's research laboratories at Pittsburgh.

USP Palletainers to be Manufactured on West Coast

According to a recent announcement by W. C. Neumann, general sales manager of Union Steel Products Co., Albion, Mich., and Vincent Ryan, president of Banner Metals, Inc., Compton, Calif., a license agreement has been consumated with Banner for the manufacture and sales of USP Palletainers throughout seven western states. Western manufacturing and sales operations as handled exclusively by the Banner Metals organization include: Washington, Oregon, California, Arizona, Idaho, Utah and Nevada.

Brooks Stevens to work with Olin Mathieson

Brooks Stevens Associates, Milwaukee, industrial designers, have been retained to assist the Aluminum division of Olin Mathieson Chemical Corp. in the development of new product applications for aluminum.

Walter F. O'Connell, Olin Mathieson senior vice president, in making the

Armco Laboratory Offers Interesting 20-Year Case History

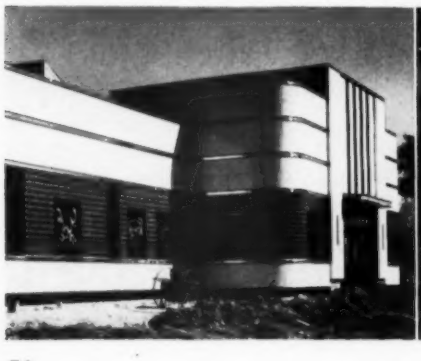
AN EDITOR OF MPM attended the formal opening of the Armco Research Building when it was dedicated in November of 1937. The glossy, porcelain enameled exterior finish was then thought to be a daring innovation in industrial construction.

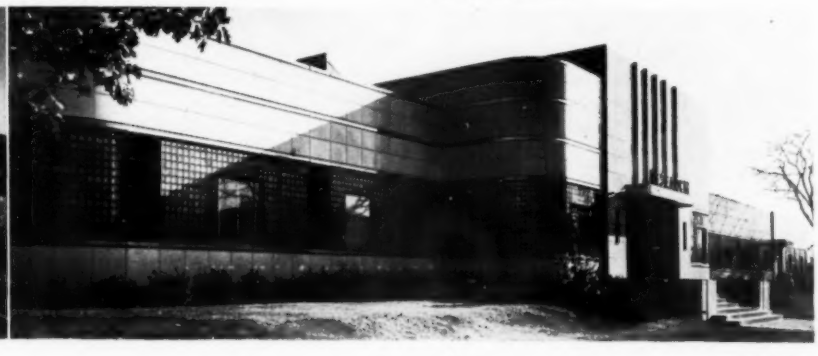
In a current report on the building, R. L. Kenyon, associate director of the research laboratories at Armco, said, "As we stood listening to the dedicatory remarks, we believed that this building would prove the durability and practicality of porcelain enamel panels. But only time could tell if we were right.

"Now, twenty years later, enough time has passed to confirm our original opinions. The same panels are still on the building. They are still glossy and new looking. Maintenance has been far below the most conservative estimates made at the time of dedication. In short, the porcelain enamel panels have proved durable and economical."

The current report states that the building has only twice been cleaned over-all, and close current inspection shows a very thin film of dirt that cannot be detected a few feet away.

It is easy to see from the accompanying photographs that visitors viewing the laboratory building today might readily misjudge its age, due to the extremely modern design, in terms of 1937, and the over-all appearance of the structure itself.





announcement, said that Brooks Stevens Associates would work closely with the Aluminum division's product design and engineering departments on advanced projects to incorporate aluminum into the design of products of tomorrow.

American Chemical Paint Now Amchem Products, Inc.

Officials of the American Chemical Paint Co., Ambler, Pa., have stated that, since the company started 44 years ago, its activities have been expanded and its products diversified in the field of chemicals to the extent that the firm no longer manufactures paint of any kind. As a result, the firm name has been changed to Amchem Products, Inc.

The change of name will not affect in any way the capital or corporate structure of the company; personnel will remain the same; and the company will continue to supply chemical products and service to the metalworking and agricultural fields.

Controls Co. Declares Dividend

Directors of Controls Co. of America, Schiller Park, Ill., recently declared a dividend of 20 cents a share on the company's capital stock, payable July 1 to stockholders of record at the close of business June 12, 1958.

Reynolds Completes Shipping Building in Alabama

A newly-completed shipping building is now speeding shipments of fabricated aluminum from Reynolds Metals Company's alloy plant in Listerhill, (Sheffield) Ala. It is the first major unit to be completed under the expansion program underway at the plant, which will include what is believed to be the world's largest hot mill for rolling of aluminum sheet.

Roll Formed Products Co. Purchases Flexangle Corp.

Purchase of the Flexangle Corp., W. Hartford, Conn., by the Roll Formed Products Co., Youngstown, Ohio, was announced recently by John D. Finnegan, Roll Formed president. Finnegan also announced the appointment of William W. Bresnahan, Roll Formed vice president, as president of Flexangle.

Flexangle manufactures a universal slotted angle system used in the erection of light- and hevay-duty storage racks, maintenance platforms, electrical mountings, pallet racks, and other similar structures.

Roll Formed will retain the corporate and trade name Flexangle.

New Plant for Molybdenum

Construction of a $1,000,000 plant for the production of strategically-important molybdenum metal and molybdenum-base alloys has been announced by Arthur H. Bunker, chairman of American Metal Climax, Inc.

Situated at Coldwater, Mich., the plant will be owned and operated by Climax Molybdenum Co. of Michigan, a wholly-owned subsidiary of American Metal Climax.

Grand Rapids Firm to Represent Fairmont Aluminum

Fairmont Aluminum Co., producer of aluminum sheet, coil, and circles, has appointed David T. Applebee & Co. as exclusive sales representative for a major part of the State of Michigan.

W. Bradley Blair, Fairmont director of sales, said that the area to be served by the newly-designated sales representative consists of the northern, northwestern, and western sections of Michigan.

Principal partners of David T. Applebee & Co. are Applebee and Earl R. Knutson, Jr., both of whom have had long experience in the area in the sale of nonferrous metal products. Offices of the firm are at 711 McKay Tower, Grand Rapids 2, Mich.

Fairmont Aluminum Co. is a wholly-owned subsidiary of Cerro de Pasco Corp.

Crucible Steel Declares Dividend

At a meeting of the board of directors of Crucible Steel Co. of America, Pittsburgh, Pa., held recently, a quarterly dividend of 10 cents per share on the common stock was declared payable June 30 to shareholders of record June 16, 1958.

Kristoff Heads New Aluminum Warehousing Firm

The organization of Midwest Aluminum Supply Corp., with offices and warehouse at 2530 W. Third St., Cleveland, Ohio, has been announced by L. A. Kristoff, president of the company.

The new firm will distribute Olin Aluminum mill products produced by Olin Mathieson Chemical Corp., specializing in aluminum warehousing throughout the midwest, and will offer a complete line, including sheet, plate, rod, and bar, structurals, wire, and fasteners.

Yale & Towne Sells Powdered Metal Plant

The Yale & Towne Mfg. Co., White Plains, N. Y., has sold the business and certain production facilities of its Franklin Park, Ill. powdered metal products plant to American Powdered Metals, Inc., North Haven, Conn., which plans to continue operations of these facilities with Henry S. Shroka in charge as western manager.

Large Aluminum Reduction Plant Now in Operation

Reported to be the nation's second largest aluminum reduction plant, the new $110,000,000 Ormet facility, owned jointly by Olin Mathieson Chemical Corp. and Revere Copper and Brass, Inc., is now in production. The announcement was made by Walter F. O'Connell, president, Ormet Corp.

Located between Clarington and Hannibal, Ohio, the facility has an annual capacity of 180,000 tons of primary aluminum. When in full production, Ormet will be reputedly the nation's fourth-largest aluminum producer. Full scale operation at the facility is scheduled for the end of the year.

Basic

Metal Products Manufacturing

NBP

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to any advertising campaign aimed at selling manufacturers of appliances and fabricated metal products

MPM IS BASIC TO COVERAGE

of the appliance and fabricated metal products field because its over 12,000 (as of April 1958) circulation is directed to every qualified buying factor in the industry. MPM provides coverage of more plants than the other **two** publications serving the appliance industry. The second publication reaches only 1446 plants engaged in producing appliances; the third publication only 1554; **MPM reaches all these same plants,** and in addition, reaches **2,613 more plants** producing similar fabricated metal products for a total plant coverage of 4,056. Individuals receiving MPM include men in top management, purchasing, design, engineering, and key plant management and supervision — **with circulation 100% verified under BPA audit regulations.**

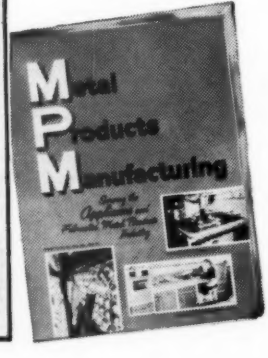
MPM IS BASIC INDUSTRY READING

Over the years, MPM has proved its editorial excellence, and has become the prime source of industry news and technical and practical information. In quality and quantity of editorial, MPM leads. During 1957, for example, MPM carried 38% more pages of editorial material than the second publication serving the appliance industry, and 69% more material than the third publication. Now in its 15th year, METAL PRODUCTS MANUFACTURING is more than ever the basic source of information on all phases "from raw metal to finished product."

MPM IS BASIC TO ADVERTISERS

For 14 years, the magazine of appliance and metal products manufacturing has consistently shown results for its regular advertisers.

MPM . . . your basic advertising buy



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SUPPLIER PERSONALS

Four new vice presidents for Aluminum Co. of America were elected by the company's board of directors at its meeting in Pittsburgh recently. They are **N. R. Althauser,** controller; **F. J. Close,** general manager, sales development and commercial research divisions; **B. J. Fletcher,** general manager of engineering; and **R. O. Keefer,** general purchasing agent.

J. Robert Killpack was elected comptroller of Ferro Corp. by the firm's board of directors. He fills the vacancy created on April 29 by the death of Joseph C. Wessel.

Killpack joins Ferro from the accounting firm of Peat, Marwick, Mitchell and Co., with whom he has been associated for the past 12 years. For two years he has lectured on accounting at Western Reserve University.

Appointment of **M. S. Feltz** as marketing manager of the Acro Division, Robertshaw-Fulton Controls Co., Columbus, Ohio, was announced by A. D. Unetic, general manager. He will be in charge of sales, advertising and promotion for the division which manufacturers snap action precision switches.

KILLPACK

FELTZ

Gries Reproducer Corp., producer of small die castings and manufacturer of small molded parts, has announced the appointment of **H. H. Welland** of the H. H. Welland Co., 911 N. Bend Rd., Cincinnati, Ohio, as the exclusive sales representative for GRC industrial products and services for the original equipment market, for the Southern Ohio, Southern Indiana, and Kentucky region.

Hanson-Van Winkle-Munning Co. recently announced the appointment of **Howard L. Wright** as manager of their new special products sales.

William B. Jacobsen will be works manager of the Lemont Mfg. Corp., new steel mill subsidiary being built by Ceco Steel Products Corp. on an 88-acre tract

near Lemont, Ill., Ceco president Ned A. Ochiltree has announced. Until the steel mill is constructed, Jacobsen will be headquartered at the Ceco general offices, 5601 W. 26th St., Chicago 50, Ill.

The Industrial Washing Machine Corp., Matawan, N. J., announces the appointment of **Ryan Sadwith** as secretary and general manager. He formerly was vice president and director of manufacturing for the J. O. Ross Engineering Corp., and president of the John Waldron Corp., New Brunswick, N. J.

Arthur Tanner, who was recently elected president of the Lux Clock Mfg. Co., announced the promotion of **Paul A. Lux** to executive vice president, as well as his election to the board of directors. Lux joined the company as sales representative in 1946. In 1950, he was made assistant general sales manager. In 1952, he was made industrial sales manager and, in 1954, assistant to the president.

Two other new members to the board of directors are **Paul Monroe,** senior vice president of the Citizens & Manufacturers' National Bank, and **Donald MacLean,** president of Truelove and MacLean, Inc.

SADWITH

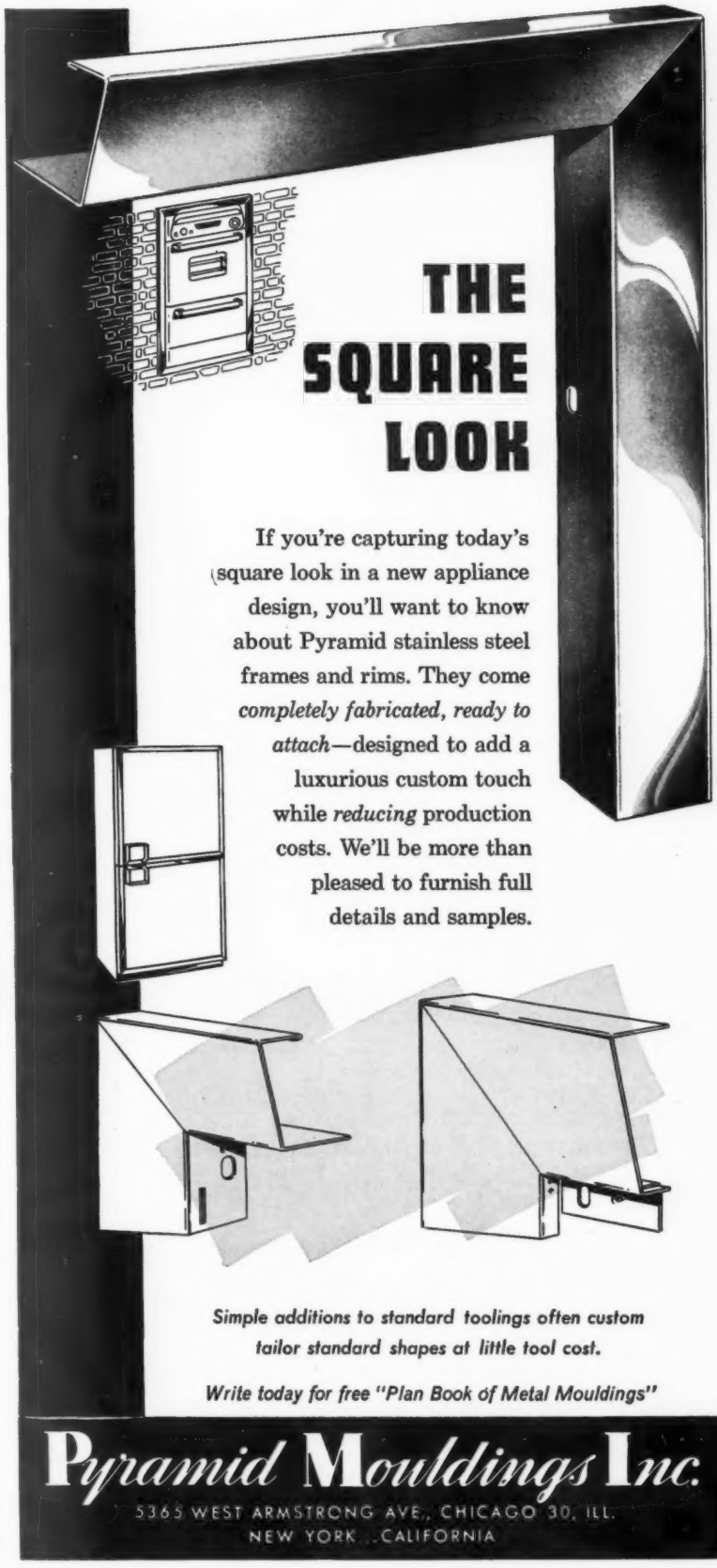
LUX

Dan E. Baker, formerly of Hartford, Conn., and presently serving as manager of advertising and sales promotion for Judson L. Thomson Co., Waltham, Mass., designers and manufacturers of rivets and rivet-setting machines, has been appointed to a three-year term on the Needham, Mass., Finance committee, according to an announcement.

James M. Darbaker, president of Copperweld Steel Co., Pittsburgh, Pa., announced a series of executive promotions.

Carl I. Collins was named vice president and assistant to the president of Copperweld. He had been vice president in charge of the Superior Steel Division of Copperweld, Carnegie, Pa. Prior to the acquisition of Superior by Copper-

to Page 74 →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METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

GAS WATER HEATERS — April shipments 227,800, 4.4 per cent below '57; January-April, 903,400, 1.7 per cent over '57.

GAS RANGES, BUILT-IN — April shipments 15,300, 1.9 per cent below '57; January-April, 57,700, 0.9 per cent over '57.

GAS RANGES, FREE STANDING — April shipments 129,300, 15.6 per cent below '57; January-April, 499,200, 17.1 per cent below '57.

GAS FURNACES — April shipments 51,100, 0.4 per cent below '57; January-April, 193,000, 1.8 per cent over '57.

GAS FIRED BOILERS — April shipments 7,400, 25.4 per cent over '57; January-April, 23,200, 4.5 per cent over '57.

GAS CONVERSION BURNERS — April shipments 7,800; 22 per cent below '57; January-April, 29,000, 22 per cent below '57.

ELECTRIC REFRIGERATORS — March shipments 261,100, 16 per cent below '57; January-March, 695,000, 24 per cent below '57.

ELECTRIC FREEZERS — March shipments 75,400, 7 per cent below '57; January-March, 204,900, 8 per cent below '57.

ELECTRIC RANGES, BUILT-IN — March shipments 46,700, 6 per cent over '57; January-March, 110,700, 2 per cent below '57.

ELECTRIC RANGES FREE STANDING — March shipments 71,200, 25 per cent below '57; January-March, 224,900, 25 per cent below '57.

ELECTRIC WATER HEATERS — March shipments 68,600, 4 per cent over '57; January-March, 188,300, 2 per cent over '57.

ELECTRIC DISHWASHERS — March shipments 32,900, 0.6 per cent below '57; January-March, 92,500, 14 per cent below '57.

ELECTRIC FOOD WASTE DISPOSERS — March shipments 47,800, 9 per cent over '57; January-March, 135,000, 2 per cent below '57.

COMBINATION WASHER-DRYER — April factory sales 11,785, 7 per cent below '57; January-April, 48,877, 33 per cent below '57.

WASHERS, AUTOMATIC & SEMI-AUTOMATIC — April factory sales 163,-021, 4 per cent below '57; January-April, 762,531, 14 per cent below '57.

WASHERS, WRINGER & ALL OTHER — April factory sales 55,598, 9 per cent below '57; January-April, 236,231, 16 per cent below '57.

ELECTRIC DRYERS[1] — April factory sales 26,885, 3 per cent below '57, January-April, 203,143, 24 per cent below '57.

GAS DRYERS — April factory sales 10,576, 30 per cent below '57; January April, 81,835, 30 per cent below '57.

IRONERS — April factory sales, 1,382, 57 per cent below '57; January-April, 7,986, 46 per cent below '57.

VACUUM CLEANERS — March factory sales 291,418, 6.8 per cent below '57; January-March, 782,538, 12 per cent below '57.

METAL FURNITURE — March shipments 13 per cent below '57; January-March, 6 per cent below '57.

TELEVISION — March shipments 406,658, 28 per cent below '57; January-March, 1,356,759, 8 per cent below '57.

RADIO — January-March shipments 874,153, 25 per cent below '57.

COMPRESSOR BODIES (Including Automobile Units) — Shipments for February, 328,760, 25 per cent below '57; January-February, 856,504, 25 per cent below '57.

STEEL SHIPPING BARRELS & DRUMS — March shipments 2,517,197, 20 per cent below '57; January-March, 7,443,184, 15 per cent below '57.

STEEL PAILS — March shipments 5,439,382, 11 per cent below '57; January-March, 15,455,431, 13 per cent below '57.

TYPEWRITERS — April factory shipments 92,267; January-April, 326,698.

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, and Air-Conditioning and Refrigeration Institute, U.S. Dept. of Commerce.

Supplier Personals

→ *from Page 73*

weld last November, Collins was president of the Superior Steel Corporation.

Joseph W. Kennedy, Jr., was named vice president in charge of the Superior Steel Division. He had been vice president of Copperweld's Ohio Seamless Tube Division at Shelby, Ohio.

Reid M. Pittenger was promoted to vice president in charge of the Ohio Seamless Tube Division.

Earl P. Sullivan, Wallace W. Denhoff and **George Knetl** have been promoted to new posts at the Binks Mfg. Co., Burke B. Roche, president of the firm has announced.

Silas S. Cathcart was elected vice president of Illinois Tool Works at the annual meeting of the company's board of directors held recently. He will continue in his capacity as general manager of Illinois Tool's Fastex division, 195 Algonquin Rd., Des Plaines, Ill.

J. Philip Starbuck has been elected vice president in charge of industrial relations of Controls Co. of America, Schiller Park, Ill., it was announced recently by Louis Putze, president. Starbuck formerly was director of industrial relations.

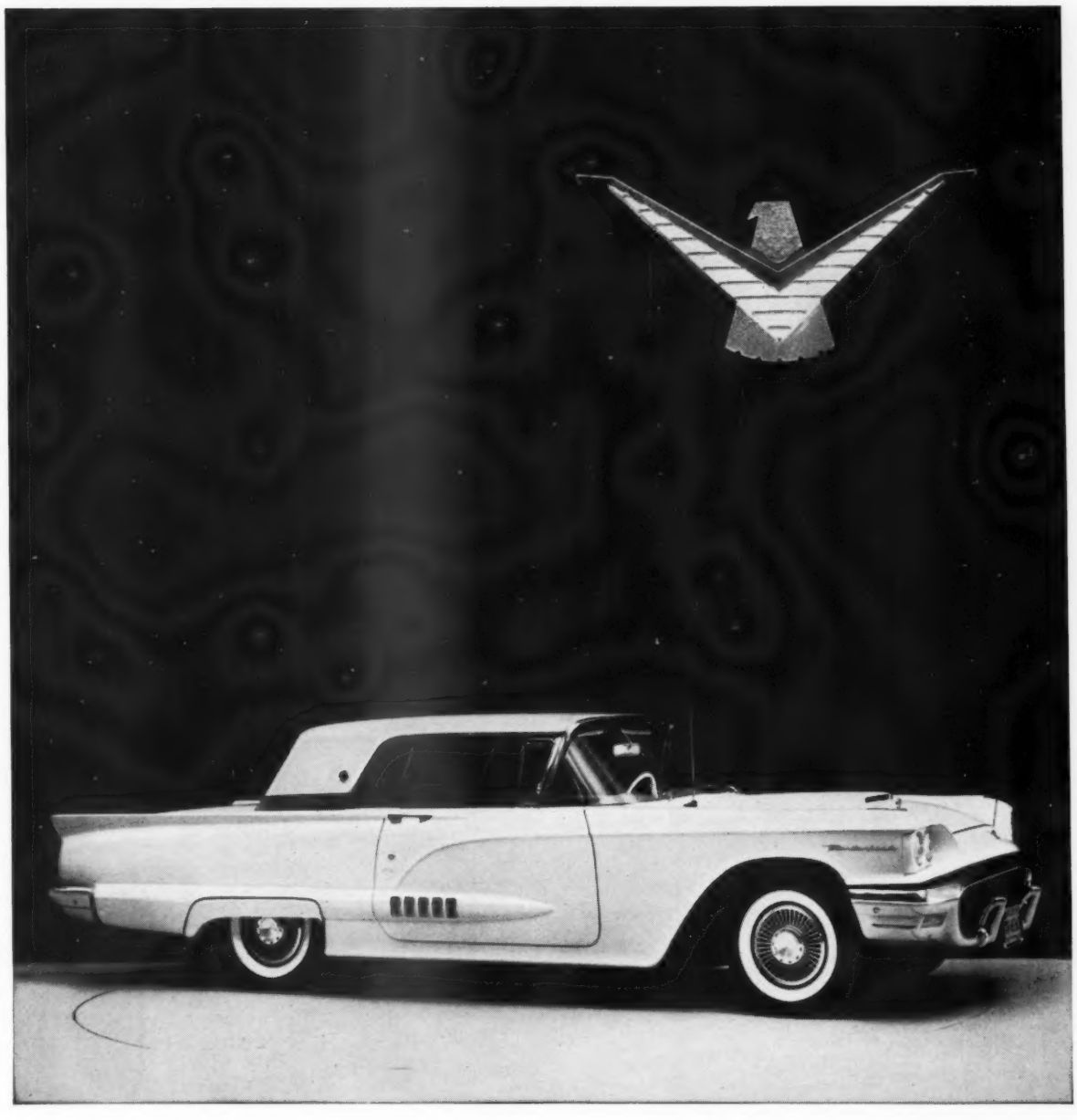
CATHCART

STARBUCK

Fairmont Aluminum Co. has appointed **Chester A. Stevens** to the post of district manager of its Chicago, Illinois office, it was announced recently by W. Bradley Blair, Fairmont director of sales.

Robert T. Sullens has been named controller of The Patterson Foundry and Machine Co., it was announced by C. W. Gerster, president.

Jacob G. Schirtzinger and **Harry W. Kole** have been promoted to district sales managers by Kelite Corp., manufacturer of industrial chemicals and steam cleaning equipment, according to an anouncement by William Sorensen, marketing director.



Dow Latex in paint primer guards T-Bird quality!

Rust won't take its toll in Thunderbird quality! The understructure of these sleek new models is thoroughly protected with a rust-preventive dip-coating of paint primer formulated with Dow Latex.

You get a lot more than quality insurance with these revolutionary new paints for metal. They dry to a tough, durable coating salt spray can't penetrate. They eliminate fire hazard and costly solvent recovery systems because water replaces flammable solvents. Latex paints for metal mean safer working conditions and can mean lower insurance rates for your plant. And they can be used without changing your present systems.

Ask your supplier now about paints for metal formulated with Dow Latex. Or get details from THE DOW CHEMICAL COMPANY, Midland, Michigan, Coatings Sales Dept. 2150R.

LATEX T.M.

YOU CAN DEPEND ON DOW

Everybody profits ...because

you belong

in this picture!

The publisher of this magazine is often asked what kind of a man you are . . . and how many like you are receiving his magazine.

Why is he asked?

Because the *advertisers* (whose money is his chief income) insist upon knowing the types of people (by industry or profession, by title) for whom the magazine is edited — and how many are getting it.

In order to standardize on the presentation of such information to advertisers and to have its accuracy vouched for by a disinterested third party, nearly 450 publishers have joined some 200 leading advertisers and advertising agencies in a non-profit organization called Business Publications Audit.

The purpose of BPA is to assure advertisers . . . by frequently checking and rechecking . . . that each member publisher is indeed distributing his magazine, in the *numbers* promised, to the *types* of men he promised would receive it.

The BPA symbol in this magazine means that *you belong* . . . that because of your occupational interests you are qualified, in the eyes of the advertisers, to receive it.

The advertiser can thus tell whether he's getting his money's worth.

The publisher has a better sales story to prospective advertisers because his magazine is "audited."

And you, the reader, get more value from the magazine because both the advertisers and editors, knowing what your special occupation is and what your interests are, are better able to prepare advertising and editorial material that will be most informative and useful to you.

What you can do

Publishers and advertisers frequently write to magazine readers to learn what kind of articles and advertisements appeal most. Cooperate with them — will you? — by answering their questions . . . in the interest of better communications between makers and markets.

BUSINESS PUBLICATIONS AUDIT OF CIRCULATION, INC.

420 Lexington Avenue New York 17, N. Y.

BPA

A NON-PROFIT, TRIPARTITE MEMBERSHIP CORPORATION OF ADVERTISERS, ADVERTISING AGENCIES AND BUSINESS PUBLICATIONS

Finishes take a beating, too . . . when children are around. But junior's artwork wipes off clean when the finish is skillfully formulated with the right medium and TITANOX* titanium dioxides.

For organic finishes—air dry or bake—TITANOX-RA, TITANOX-RA-50 and TITANOX-RA-NC, the versatile rutile titanium dioxides are first choice.

For titania porcelain enamels, beautiful and resistant to junior and generations to come, TITANOX-TG and TITANOX-TG-400 are the preferred titanium dioxides.

All of these TITANOX products help maintain the color, gloss, opacity and durability the finish must have indoors or outdoors. And through their easy working qualities and uniformity they help lower production costs. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. 5732-B

TITANIUM PIGMENT CORPORATION

Subsidiary of **NATIONAL LEAD COMPANY**

*TITANOX is a registered trademark for the full line of titanium dioxides offered by Titanium Pigment Corporation.

Presstime News

RCA Whirlpool Washer-Dryer Sales Set New Record

"An appliance that is new in functional concept, and in service to the consumer, will find a ready market—recession or no recession."

Thus did Harry Kane, general manager of Whirlpool Corp.'s laundry division, interpret continually-rising sales of the RCA Whirlpool combination washer-dryer. As of early June, total sales to dealers were better than 28 per cent ahead of 1957 figures.

"During the first five months of 1958," said Kane, "the combination has maintained a consistent rate of improvement over 1957. While numerical sales can't yet be compared with automatic washers, this steady increase indicates a rapid growth of customer acceptance and is particularly interesting in that unit volume already comes close to matching the sale of gas clothes dryers."

Northwest Chemical Co., 9310 Roselawn, Detroit, Mich., manufacturers of specialized metal cleaning compounds, announces the appointment of two new regional representatives.

Norman P. Rowan will be in charge of the Youngstown, Ohio and Pittsburgh, Pa. areas with headquarters at 462 Ewing Rd., Youngstown 12.

Richard B. Chalker will represent the company in the Chicago area with office address to be announced later.

Thomas T. Arden, president, Robertshaw-Fulton Controls Co., has announced the appointment of Vice President **Woodford D. Miller** as general manager of the company's Fulton Sylphon Division, Knoxville, Tenn.

He replaces Vice President Freeman G. Cross, who will continue at the division in charge of expanded marketing and product development. The new post also involves possible acquisitions and mergers of companies whose product lines can be integrated into the Fulton Sylphon operation.

MILLER

CROSS

Cabinet Makers Elect Officers

New officers, who were elected at the recent annual convention of the Steel Kitchen Cabinet Manufacturers' Association, held at the Edgewater Beach hotel, Chicago, are: M. L. Ondo, Youngstown Kitchens, president; and Marvin J. Berz, Marvel Metal Products, vice president. Newly-elected directors are: Russell Knouse, Toledo Desk & Fixture; H. T. Hulett, General Electric; Robert A. MacNeille, St. Charles Kitchens; R. W. Sponholtz, Geneva Modern Kitchens; C. K. Reynolds, Jr., Republic Steel, Berger Div.; and C. A. Reinbolt, Jr., Whirlpool Corp.

Lawrence P. O'Brien has been promoted to the newly-created position of field service coordinator for the Maytag company's Cincinnati, Chicago, and Indianapolis branches, according to S. R. Payne, general service manager for the appliance manufacturing firm.

Olin Mathieson Chemical Corp. recently announced the completion of its integration program which consolidates the company's operating units into seven industrial divisions.

Eleven former divisions have been integrated into four new divisions while the Squibb, Winchester-Western and International divisions continue their present organization structure.

The four new divisions, and the vice presidents appointed to head them, are: Chemicals, **Edward Block;** Metals, **Jess E. Williams;** Packaging, **Robert H. Evans;** and Energy, **Carroll Copps.**

Blaz A. Lucas, Jr. has been appointed manager of sales for the Ingersoll Products division of Borg-Warner Corp., it was anounced recently by James H. Ingersoll, president of the division. Lucas has been associated with the division since 1956, serving first as director of procurement, and later as factory manager, the latter being the position he held when the new appointment was announced.

Ingersoll Products division manufactures a wide range of industrial and consumer goods, including bathroom and kitchen plumbing fixtures, furnaces, farm implement parts, automotive components, and industrial cranes.

Robert A. Anderson is retiring from Ingersoll Products division of Borg-Warner Corp. as vice president-sales after more than a quarter of a century of service. A native of Moline, Ill., Anderson started at the Chicago plant in 1930 as chief inspector. He was transferred in 1943 to the Ingersoll factory in Kalamazoo, Mich., where he was appointed works manager in 1950.

Dr. Robert M. King has accepted a position in the Applied Research Laboratories of the United States Steel Corp., Monroeville, Pa. He will work in the enameling steel group.

King received the baccalaureate degree in Chemistry in 1949; the Master of Science degree in Ceramics in 1956, and the Ph.D. in Ceramics in 1958, all from the University of Illinois.

COMING FEATURES

DESIGN

CIRCUIT BREAKERS — TYPES AND USES IN THE APPLIANCE INDUSTRY

FABRICATION

THE SLITTING AND SHEARING LINE AT WESTINGHOUSE

AUTOMATIC WELD-ROLL PLANISHING MACHINES SPEED CONTAINER PRODUCTION

FINISHING

RHEEM-CANADA WATER HEATER PLANT

A DOUBLE-DUTY ORGANIC FINISHING DEPARTMENT AT TRADE-WIND MOTOR-FANS, INC.

GENERAL

NOISE CONTROL OF DOMESTIC APPLIANCES

ADHESIVES & ASSEMBLY TECHNIQUES SPEED DESK-TOP BONDING

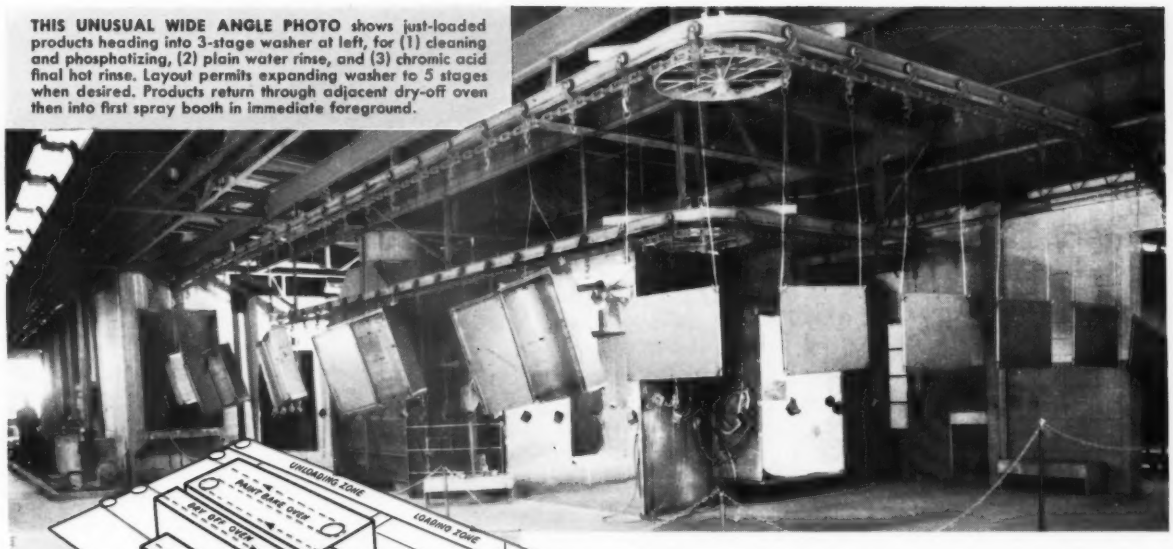
REPORT ON THE SUMMER HOUSEWARES SHOW

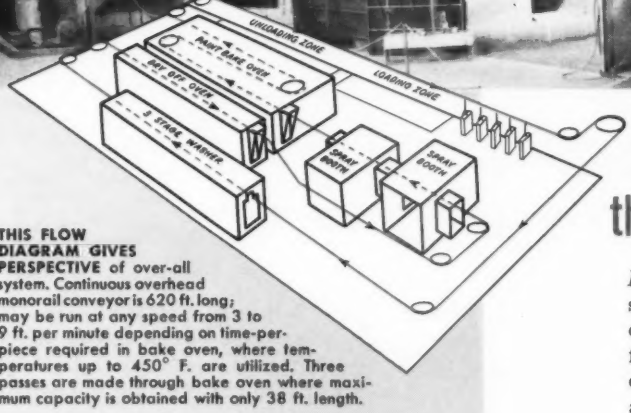
Information on Metal Stitching

A newly-published, 16-page booklet, entitled "Metal Stitching, A New Idea in Fastening," gives detailed information on stitching metal to metal or metal to non-metallic materials. Illustrated in the booklet are typical applications, some of which are reported to have increased production up to seven times and cut material costs up to 66 per cent.

One section of the booklet includes detailed drawings of special clinchers available to adapt metal stitching equipment to a variety of jobs. Over 25 pictures and over 50 drawings are included. For your free copy of this booklet, contact Readers Service Dept., METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

THIS UNUSUAL WIDE ANGLE PHOTO shows just-loaded products heading into 3-stage washer at left, for (1) cleaning and phosphatizing, (2) plain water rinse, and (3) chromic acid final hot rinse. Layout permits expanding washer to 5 stages when desired. Products return through adjacent dry-off oven then into first spray booth in immediate foreground.





THIS FLOW DIAGRAM GIVES PERSPECTIVE of over-all system. Continuous overhead monorail conveyor is 620 ft. long; may be run at any speed from 3 to 9 ft. per minute depending on time-per-piece required in bake oven, where temperatures up to 450° F. are utilized. Three passes are made through bake oven where maximum capacity is obtained with only 38 ft. length.

300% greater capacity with this DESPATCH finishing system

Hoffman Engineering Company, Anoka, Minnesota, reports a threefold increase in production capacity with their recently installed Despatch finishing system. *Versatility* is the key feature of this power system, enabling Hoffman to finish all their steel fabricated products, ranging in size from small electrical outlet boxes to 5 ft. panel enclosures, automatically, except for individual spraying. What formerly required three 9 hour shifts with their old batch-and-hand-truck operation, now takes one shift.

The use of two water-wall spray booths facing in opposite directions, facilitates painting both sides of large products. The system readily regulates to handle the various enamels and lacquers used on Hoffman products for industrial, farm and military needs.

Maybe you are launching a new product . . . or wish to pep up appearance of an existing product. Why not find out how Despatch's finishing system experience can help. There's a Despatch-trained resident engineer near you!

THIS VIEW SHOWS WASHER EXIT and entrance to dry-off oven. Note valves, meters and regulating equipment for the gas-fired bake oven. Of special interest are the two electrical control housings, typical of products produced by the Hoffman Company.

WRITE TODAY FOR BULLETIN NO. 51

16 colorful pages on modern ways to achieve better finishes, faster production and smoother handling of metal products . . . at lower cost.

DESPATCH OVEN COMPANY

619 S.E. Eighth St., Minneapolis 14, Minn.

Sales and Service in All 26 Principal Cities

DESPATCH

PIONEERS IN ENGINEERING FINISHING SYSTEMS FOR INDUSTRY

safe transit

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DANA CHASE PUBLICATIONS
York Street at Park Avenue
Elmhurst, Illinois

editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

New federal packing specification based on National Safe Transit procedures

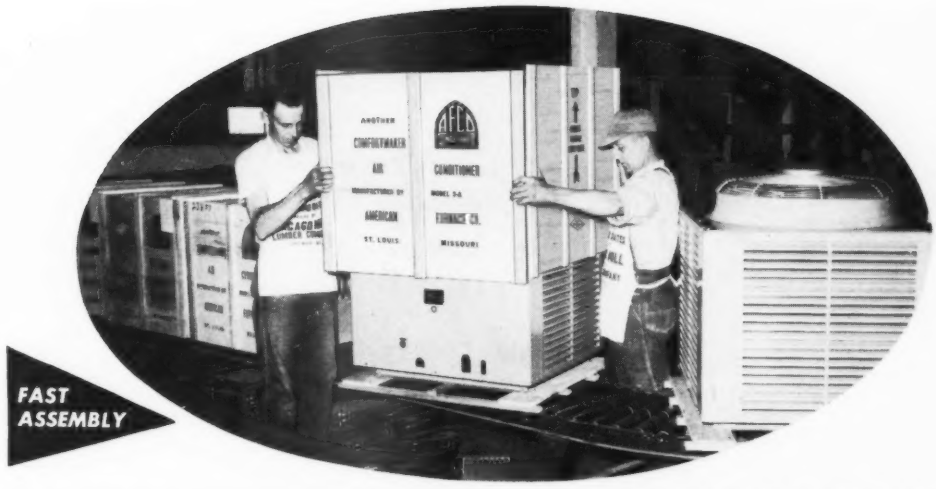
National Safe Transit Test Procedures now serve as a basis for new federal specification. Government and industry alike will benefit from the new Federal Specification PPP-P-600 dated May 1, 1958, which supersedes Interim Federal Specification PPP-P-0021 (Navy-S&A) July 15, 1957. This performance-type specification titled, "Porcelain Enamel Products and Major Household Appliances — Test Requirements for Packing of," is based on a concept of pre-shipment testing of products packed for shipment as outlined by the National Safe Transit Program, according to John C. Oliver, secretary of the National Safe Transit Committee, and managing director of the Porcelain Enamel Institute, its sponsoring association.

Three important services of the new specification were stressed by Oliver. These are: (1) It will enable government agencies to take advantage of commercial packaging practices in their procurement of major appliances and other similar products. (2) Industry will be able to supply government contracts with products from regular packaging assembly lines, thus utilizing established commercial packaging techniques and standards rather than having to adopt special government requirements at added cost. (3) Companies will be provided with a minimum standard for fair, competitive bidding.

The new specification is the result of a careful and thorough study by both government and industry representatives of an Interim Federal Specification RR-P-0021 (Navy-S&A) issued January 15, 1954, and revised by PPP-P-0021 (Navy-S&A) July 15, 1957. The National Safe Transit Committee served as coordinator for this special cooperative project of government and industry. The

Hollywood Celebrities Witness Safe Transit Test at Westinghouse

After witnessing the shock test for safe transit of Westinghouse appliances, Desi Arnaz (left), and George Murphy (third from right), watch Bill Keefe, manager of the Westinghouse quality analysis laboratory at the Mansfield, Ohio plant remove the crating to investigate possible damage. Arnaz, male half of the "I Love Lucy" team, and Murphy, actor and vice president of Desilu Productions, were visiting the Mansfield plant to get acquainted with, as Arnaz put it, "Our new family, and to see how the appliances we will be selling are made." Pictured between Arnaz and Murphy are John Craig, Westinghouse vice president, Eagon Loeckel, manager of quality control, and Dean Fighter, works manager.



MAXIMUM PROTECTION FOR AMERICAN FURNACE!

CHICAGO MILL Safeguards Quality For American Furnace Co., St. Louis, Mo., with hinged corner plywood shipping containers that provide maximum protection against shipping hazards. Chicago Mill containers are quickly and easily assembled, and allow American Furnace Co.'s central air conditioning units to be stacked high, saving valuable storage space.

Large or Small — we make 'em all. A complete line of containers for every shipping purpose.

FREE!

Illustrated catalog describing the variety of CHICAGO MILL Containers!

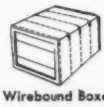
PALLET BOXES—Wire Bound

PALLET BOXES—Hinged Corner

Cleated Boxes

E-Z Pak Cleated Corrugated (Watkins type)

Wirebound Crates


Wirebound Boxes

Corrugated

Hinged Corner Crates or Boxes

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

PLANTS

- CHICAGO, ILLINOIS
- GREENVILLE, MISSISSIPPI
- HELENA, ARKANSAS
- ROCKMART, GEORGIA
- TALLULAH, LOUISIANA

revisions written into the new specification represents the combined efforts of both groups.

The scope of the specification within government levels of protection for shipment is set forth in the following statement from the specification.

Level A. — Shipments intended for indeterminate storage and world wide distribution. (Although Level A shipments are referred to herein, this specification does not contain requirements for Level A shipments.)

Level B. — Shipments intended for indefinite domestic storage or overseas shipment under known conditions.

Level C. — Shipments intended for immediate use or those which will be kept in covered storage and issued from the Government Supply System to a domestic consumer not involving ocean-going transportation.

R. F. Bisbee, general chairman of the National Safe Transit Committee, commenting on the project, said that the requirements for Level C shipments are identical to the pre-shipment test requirements of the National Safe Transit Committee. Level B requirements are slightly more severe than the standard NST requirments. This phase of the work was based upon the experiences of more than twenty firms cooperating in the project who account for an estimated 70 per cent of major appliances production. "The specification," he said, "requires performance-type testing as set forth in the Safe Transit Test Procedures. The NST test procedures simulate actual transit conditions and enable a manufacturer to know prior to shipment whether or not his product is designed and packaged to reach its destination undamaged." Bisbee pointed out that, in the specification, the choice of design and type of shipping container, and the packing of the products, is left to the judgment of the manufacturer.

Single copies of Federal Specification PPP-P-600 and the National Safe Transit Test Procedures are available without charge from Dept M, the National Safe Transit Committee's offices at 1145 19th Street, N.W., Washington 6, D.C.

New Carton, Pallet Packing for Bulk Screws, Nuts and Bolts

After thorough analysis and testing, Southern Screw Co., Statesville, N. C., has put into effect an industry-inspired pallet and carton system of packing with three advantages to the automotive, appliance, and other production line users of fasteners — easy mass handling, most effective use of storage space, and time saved in transport of fasteners to assembly lines.

The carton established as standard is 9 inches by 9 inches by 6½ inches, of telescope type, constructed of 275 pound test board, bound with wire (not stapled), easy to open and reclose, and quickly identified by an adaptation of Southern's copyrighted "EZ to C" label.

Shipping unit is a 30 inch by 30 inch disposable two-way entry pallet with a 36-carton load stacked in four layers of nine cartons each. Cartons may be handled in any desired unit, by hand or with power equipment. Top half of each carton is designed for use as container so that contents are made quickly available at two points on the assembly line (see photo below).

A chart showing packing quantities of wood, machine, tapping and drive screws in carton and on pallets is available upon request to Southern Screw Co., P. O. Box 1360, Statesville, N. C.

patterns
that
catch
the
eye...
STANDARD
PERFORATED METALS
Consumer appeal, functional beauty, and economy are part of your designs with Standard's Perforated Metals. Standard's complete selection of perforated patterns and custom pattern design service add the qualities that count at the point of sale! Specify perforated metal by Standard.
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IF. . . .

YOUR PROBLEM IS A

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that will give you satisfactory enameling results at . . .

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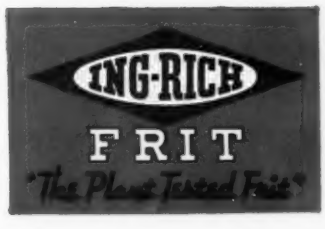
ING-RICH *Know How* can provide the Plant Tested *Proven* results.

INGRAM-RICHARDSON, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA



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6 to 9" inclusive 16.00 15.00 14.00
Measured in vertical column inches; each column 2¼" wide. Accepted in column-inch multiples only. For reverse plate, add 25 per cent. No agency commission.

Guthrie heads slate

→ *from Page 39*

over the same period for 1957. With the index for home appliance sales in the area estimated at 31 per cent down for the same period, this would indicate that the Westinghouse sales for the six weeks were some 60 per cent above the norm.

Said Pettersen, "The present situation is basically economic, but it is very important psychologically. The buyer must be sold!" In pointing to the importance of creative selling, he said, "Creativeness is the life blood of today, tomorrow and the future of America."

One IAM meeting per year

Announcement was made that a meeting scheduled earlier for Texas had been cancelled, and that the annual meeting and exhibit in Cincinnati would, in the future, replace the two meetings per year which have previously been held by IAM.

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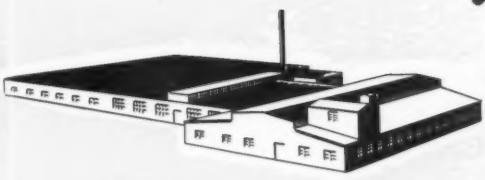
A STUDY OF THE CHARACTERISTICS OF ANODIZED ALUMINUM ALLOYS by R. V. Vanden Berg, Aluminum Company of America. Six pages — black and white. Covers a wide variety of surface treatments available for aluminum, and the many finish characteristics. 25¢ per copy.

Announcing.....

PALLETAINER®

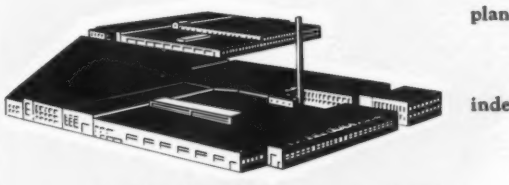
Plants from Coast to Coast!



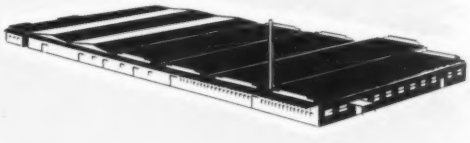
Canada . . . USP Palletainers are manufactured and sold in Canada by Croname, Ltd., Waterloo, Quebec.

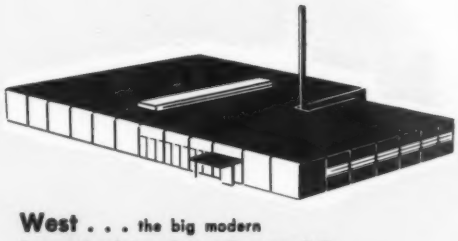
To serve you better, Palletainer plants are now strategically located across the United States and Canada. Your guarantee of even higher quality, lower price plus the improved ability to deliver. These big and modern, well-equipped plants are all busily engaged in the manufacture and distribution of USP Palletainers —the best engineered steel mesh containers built to solve every conceivable materials handling need. Palletainers are the versatile, economical, practically indestructible containers that can help you *right now!* Whether you need a container for shipment, storage, processing, production line use, warehousing—or general plant transport, Palletainers are the answer. And, they are immediately available in 4 specific standardized types, a variety of practical sizes and capacities ranging from 2,000 to 6,000 pounds per unit—conservatively rated

Get the facts from your nearest Palletainer representative today. He'll be happy to assist you.



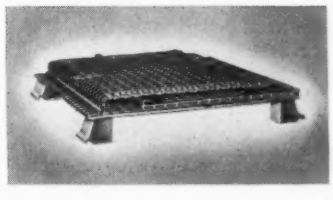
East and Midwest . . . Union Steel's four great plants in Albion, Michigan manufacture and distribute Palletainers throughout the eastern and Midwestern United States.





West . . . the big modern Banner Metals Inc. plant at Compton, California, now the manufacturer of USP Palletainers exclusively serving the entire West Coast area.

Only USP Palletainers offer so many outstanding construction features such as: steel rod mesh construction, double reinforced; interlocked U-channel underframe and safe stacking legs; loss-proof locks; full 8-way entry as well as the flat-fold feature shown below.



Flat-Fold . . . another Palletainer exclusive that makes storage-stacking or packing easier and provides for more economical return shipments. 75% space savings—too!

Write today for your copy of the new illustrated, detailed USP Palletainer Catalog. Yours for the asking!

UNION STEEL PRODUCTS CO.

510 N. BERRIEN STREET **ALBION, MICHIGAN**

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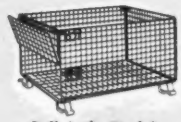
2,000—4,000—6,000 lb. capacities

Hi-Lode Models
2,000—4,000—6,000 lb. capacities



Bulk-Lode Models
2,000—4,000—6,000 lb. capacities

Warehouse Models
3,000—4,000 lb. capacities

SORENG STANDARD
SNAPAC SWITCHES

OFFER YOU ✓ RUGGEDNESS
✓ DEPENDABILITY
✓ HIGH CAPACITY
✓ ECONOMY

USED BY MAJOR MANUFACTURERS FOR OVER 4 YEARS

The Soreng SNAPAC line is designed to provide rugged, dependable switches for the broadest range of snap action switch applications . . . at a realistic cost. The features listed define the characteristics of long life inherent in SNAPAC Switches. For complete information, we suggest you consult with a Soreng engineer or write for technical literature.

Electro-mechanical Features

- *Instantaneous, positive make and break action*
- *High contact pressure*
- *Non-sensitive to vibration and shock*
- *Stable under momentary high overload*
- *Available S P S T normally open or closed, or S P D T*

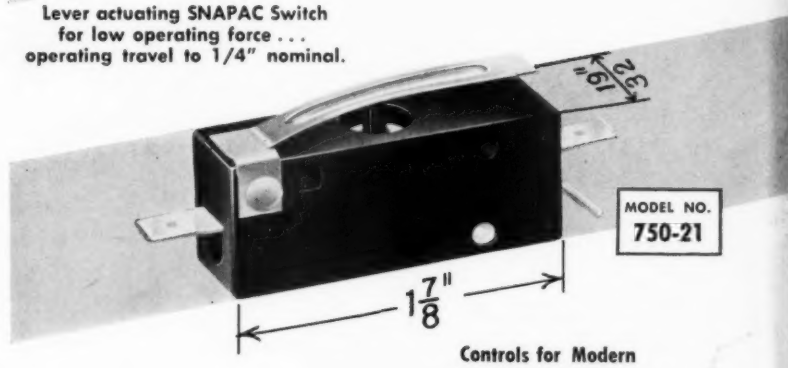
Rating:

15 amp 125 V. A.C.
10 amp 250 V. A.C.
½ h.p. 125/250 V. A.C.
Listed by Underwriter's Laboratories

SNAPAC pin plunger switch operates within 1/32" to 1/16" pre-travel. Total 3/32" to 1/8".

Panel mounting SNAPAC Switch for extra over travel requirements. Pre-travel 1/32" to 1/16". Total travel 1/4" to 3/8".

Lever actuating SNAPAC Switch for low operating force . . . operating travel to 1/4" nominal.



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